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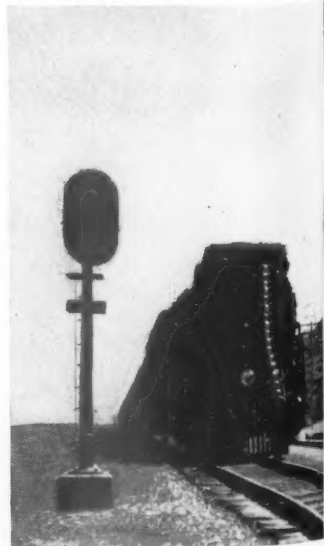
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RAILWAY AGE

How Much Reduced Railway Purchases Have Injured Business

Elsewhere in this issue we report the annual meeting of the Purchases and Stores Division of the Association of American Railroads. It is, therefore, timely to call attention to the effects on the country's business produced during the depression, and still being produced, by the decline of railway purchases due to the decline of railway net earnings. Few realize that net earnings concern anybody but the security-owners. But, as this paper repeatedly has demonstrated, and as is illustrated again by statistics given in the accompanying table, the railways' net earnings determine absolutely, over periods of years, the amount of their buying from the manufacturing industry; this part of their buying fluctuates by hundreds of millions of dollars annually; and consequently an increase or decline of railway net earnings affects every business, every man, woman and child, in the United States.

How Purchases Declined with Net Earnings

If anybody doubts this, let him study the statistics in the accompanying table. They compare year by year, and for two seven-year periods, the amounts of net earnings and of purchases made by Class I railroads. The first period is the seven years of pros-

perity 1923-1929, inclusive; the second, the seven years of depression 1932-1938, inclusive.

manufacturing industry? Well, these purchases were \$5,508,730,000 less in the seven years ending with 1938 than in the seven years ending with 1929. The decline in their average annual net earnings was 624 million dollars, or 56 per cent; the decline in their annual purchases from the manufacturing industry 787 million dollars, or 61 per cent. Thus, the loss of business suffered by the manufacturing industry and its employees due to the decline of railway net earnings was 163 million dollars more annually than the loss of net earnings suffered by all railroad security-owners.

Business Lost by Iron and Steel, Equipment and Lumber Industries

The figures indicate the industries (and their employees) that were affected most by the decline of purchases. The iron and steel industry heads the list. Total purchases made directly from it declined 1,700 million dollars in the second period as compared with the first, or 243 million dollars annually.

But this was by no means all the loss of business that the iron and steel industry sustained. It furnishes most of the materials used in locomotives and cars; and purchases of equipment from manufacturers (exclusive of

Railway Purchases in 1923-1929, Inclusive, and 1932-1938, Inclusive

	Net Ry. Operating Income (000)	Total pur- chases from manufacturers (000)	Equipment from manufacturers (000)	Materials from manufacturers (000)	Iron and Steel products (000)	Forest products (000)	Miscellaneous (000)
1923	\$961,955	\$1,490,398	\$369,495	\$1,120,903	\$464,955	\$232,511	\$423,437
1924	973,837	1,306,882	435,483	871,399	365,610	180,872	324,917
1925	1,121,076	1,241,232	311,810	929,422	419,254	170,305	339,863
1926	1,213,090	1,332,440	246,762	1,085,678	507,302	186,291	392,085
1927	1,067,985	1,160,703	203,596	957,107	432,604	175,729	348,774
1928	1,172,864	1,061,169	174,436	886,733	397,544	160,794	328,395
1929	1,251,698	1,388,916	397,121	991,795	437,840	157,551	396,404
7 years	7,762,505	8,981,740	2,138,703	6,843,037	3,025,109	1,264,053	2,553,875
Average per year.....	1,108,929	1,283,106	305,529	977,577	432,159	180,579	364,839
1932	326,298	270,723	2,623	268,100	100,550	52,200	115,350
1933	474,296	272,703	5,857	266,846	112,685	41,185	112,976
1934	462,652	461,862	66,850	395,012	159,758	64,271	170,983
1935	499,819	401,526	35,696	365,830	165,150	58,037	142,643
1936	667,347	778,435	222,594	555,841	278,223	76,770	200,848
1937	590,204	870,722	173,320	697,402	356,367	104,302	236,733
1938	372,846	417,039	74,006	343,033	152,411	57,156	133,466
7 years	3,393,462	3,473,010	580,946	2,892,064	1,325,144	453,921	1,112,999
Average per year.....	484,780	496,144	82,992	413,152	189,306	64,846	159,000
Aggregate decline 7 years..	4,369,043	5,508,730	1,557,757	3,950,973	1,699,965	810,132	1,440,876
Average decline per year..	624,149	786,961	222,537	564,424	242,852	115,733	205,839
Per cent decline.....	56	61	73	58	56	64	56

perity 1923-1929, inclusive; the second, the seven years of depression 1932-1938, inclusive.

In the seven years ending with 1938 the railroads made \$4,369,043,000 less net earnings (net operating income) than in the seven years ending with 1929. To what extent did this affect their purchases from the

that built in railway shops) declined in the second seven-year period as compared with the first a total of 1,558 million dollars, or 223 million dollars annually. The seven-year decline in purchases of both iron and steel products and equipment was 3,258 million dollars, or 465 million dollars annually. And this busi-

ness was lost not only by manufacturers, but also by the mines that produce ore; the mines that produce coal for industry; and all the intermediate industries which participate in converting ore and other raw materials into finished equipment and materials.

Another industry that lost heavily was that producing lumber and other forest products. Railroad buying from it declined almost 116 million dollars annually. And producers of miscellaneous manufactured products lost more heavily. Railway purchases of these products were less by 1,441 million dollars, or 206 million dollars annually, in the last seven years than in the seven years ending with 1929.

When we add fuel statistics to those included in the table, we find that purchases of manufactures and fuel were more than 12,177 million dollars in seven years ending with 1929, and only 5,058 million in the seven years ending with 1938—an aggregate decline of more than 7 billion dollars.

Reduced Railway Buying Offsets Increased Home-Building

It has been repeatedly said, and truly, that the revival of home building, of railroad buying and of public utility development are the principal essentials to complete recovery of business in the United States. The government has adopted an extensive plan of guaranteeing loans for home-building; and it is working. Contracts for residential construction in the first five months of 1939 were the largest since 1929 and 61 per cent as large as in that year. The government has done much to prevent, and as yet nothing to stimulate, rehabilitation of the railroad industry and revival of its buying, although legislation for that purpose is pending. Sometimes questions are raised as to why the large increase of residential construction is not stimulating general business more. One answer can be found in the figures for railway buying. In the first five months of 1937 residential contracts were 466 million dollars and railroad buying from the manufacturing industry was 452 million dollars—a total of 918 million dollars. In the first five months of 1939 residential contracts had increased to 613 million dollars, but railroad buying from the manufacturing industry was only about 233 million dollars, a total of only 846 million dollars. Thus the decline of railroad buying more than offset by a margin of 72 million dollars the effects on the country's business of the increase in residential construction. And the government continues to hinder needed revival of public utility development by private enterprise.

Increased Railway Buying Essential to Business Recovery

The railroad problem is entirely one of net earnings. Only a large increase of net earnings will enable the railroad industry to contribute its share toward recovery,

or even to survive as a private enterprise. The principal reason is that only an increase in net earnings will enable the railroads to buy equipment, do maintenance work and make improvements essential to effecting needed economies and bettering their service. There could be no more important single contribution to recovery and prosperity than the increase of at least a half billion dollars annually in their purchases of equipment and materials that the railroads need to make even under present conditions of depression, and of three-quarters of a billion that they would need to make under conditions of prosperity. The great iron and steel industry, which is in the doldrums, would benefit almost as much by this increase of railroad buying as the railroads themselves. All the industries (and their employees) from which the railroads need to buy more would, in the aggregate, benefit much more than the railroads themselves. And the benefits of the increased buying, and of the resulting economies and improvements in railway service, would extend to all industries, all shippers and travelers, and every class of the people.

Industrial Traffic Managers and Business

The railroads are seeking legislation to help increase their business, their employment and their buying. And what are they asking that this legislation shall do? Principally that it shall change policies of the federal and state governments now unfairly discriminating against them and in favor of other carriers, as respects regulation and subsidies. And from what sources is the principal opposition to this legislation coming? From business interests—including some parts of the very industries that would benefit most by restoration of railroad buying power. Why? Apparently, because their traffic managers are making savings in freight charges by using subsidized water and highway carriers. But if the higher executives of many large corporations were really as good business men as persons occupying their positions should be, they would be considering some other important factors that are involved. They are joining in the general outcry of business against excessive and wasteful government expenditures and their effects on government budgets and taxes. How, then, about excessive and wasteful government expenditures on waterways and commercial highways, and *their* effects on government budgets, and on the taxes that must be paid by these large corporations along with all other business? The traffic managers of large industries evidently don't consider them; but their higher executives certainly should—or silence their outcries about New Deal spending and taxing.

"Saving" on Freight Rates, While Losing Sales and Increasing Taxes

Neither do the traffic managers, in promoting and practicing cut-throat competition with the railways, con-

sider its effects on railroad buying from even the industries by which they are employed. It is not their job, but that of the sales departments, to sell to the railroads. But it is as plain as a pikestaff that every ton of traffic diverted from the railways reduces their net earnings, and thereby reduces their buying from manufacturers. The railroads use huge amounts of iron, steel, other metals and forest products in improving and maintaining their tracks and other permanent structures. We should like to ask the executive and sales officers of manufacturing companies that lost 5½ billion dollars of business during the last seven years by the reduction of railway buying just how much iron, steel, other metals, forest products, etc., were used meantime in building the waterways and highways used in competing with railways?

Business men, especially those managing large companies, are supposed to be smart, at least about business. If, however, the unwashed mob ever has in the history of mankind shown greater stupidity regarding economic problems than is being shown by some business interests regarding this country's transportation problem it has been our fortune never to have read about it.

I. C. C. Signal Inspection Regulations

On May 25, the Interstate Commerce Commission served an order on the railroads requiring compliance with a set of rules, standards, and instructions for the installation, inspection, maintenance and repair of all apparatus commonly termed as signaling for directing and protecting train movements, with the exception of manual block signaling. These regulations were issued in accordance with the signal inspection law, approved August 26, 1937, and are effective on September

1, a period of two years being allowed in which to make required changes in existing installations.

The law gives the Commission authority to order railroads to install signaling systems, interlockings, train control, etc., and also provides that the railroads cannot discontinue or materially modify any existing signal facilities without permission from the Commission. Failure to comply with any provision of the law or regulations calls for a fine of \$100 for each violation, and a penalty of \$100 for each day the violation continues.

The scope of the regulations and the extent to which they go in specifying practices, tests and inspections surpass, with respect to details of equipment, any previous governmental regulations of the railroads. Arguments as to whether the enactment of this law was justified as a safety measure, or was purely a "make work" bill, are now beside the point. Rather, the pertinent question deals with the manner in which the law will be administered by the Commission and its Bureau of Safety.

The feature of the law authorizing the Commission to order the carriers to install signaling facilities on specified territories presents a wide range of possibilities. Keeping in mind, however, that the only legitimate reason for ordering such installations is to correct conditions which evidence obvious lack of safety, the railroads, by maintaining good safety performance, can present a logical defense. This situation may warrant more exacting supervision of train operation, in some instances.

Some roads contend that construction work is now being delayed until representatives of the Bureau make inspections and reports before granting permission to proceed with changes in existing signaling, and that these delays seem unnecessary with respect to changes of minor importance, such as moving signals when changing the location of passing track switches, providing signaling temporarily during line changes, etc. In

Regulation Should Embrace Highway and Waterway Construction— Not Merely the Use of These Facilities

"The division of traffic between competing forms of transport on an economic basis does not solve the problem created by a surplus of transportation facilities. No division of traffic in such cases can make all transportation agencies profitable without imposing unjust burdens upon the shipping public. A truly co-ordinated transportation system therefore requires control over the supply of transportation facilities. . . .

"There is an important difference between the control exercised in the railroad industry and in the motor-carrier and air-carrier industries through the issuance of certificates of public convenience and necessity. In the railroad industry, control over railroad building is obtained in this manner, but in the motor and air-transport industries control does

From "Economics of Transportation" (Revised Edition), by Dr. D. Philip Locklin—Emphasis Supplied.

not extend to the construction of the transportation facilities themselves but only to common-carrier services over them.

"The policy of indiscriminate construction of water transportation facilities and perhaps of highways, must be re-examined. If transport co-ordination is to be brought about, the public must be willing to have proposals for the construction of new transportation facilities subjected to scrutiny of their economic justification. . . . Just as indiscriminate building of railroads caused difficulties in the early days of railroad development, the effects of which still persist, so may indiscriminate building of other transportation facilities today create difficulties that it will take generations to overcome."

order to prevent delays, it would seem that the Bureau might well issue instructions to the carriers outlining the types of minor changes which the railroads could handle without securing permission, but with the understanding that the Bureau would be notified and that the changes might be subject to inspection by the Bureau later. Objections have been raised to some of the requests of the railroads for major changes, and these have gone to hearings, but in the majority of instances the carriers have won favorable decisions.

The changes necessary to bring existing installations into conformity with certain of the new standards within a period of two years will represent a large item of expense on certain roads. Recent experience, however, indicates that any road having adequate reasons for requesting an extension of time will be given a favorable hearing, providing it shows proper diligence in getting the work started.

Some of the more prosperous heavy traffic roads have been making practically all of the tests and inspections now required for years, and, except for the preparation of records, may not be put to much additional expense. On the other hand, a majority of the carriers contend

that they will be required to make large expenditures to purchase testing instruments, to perform inspection work, and to keep records. Whether the regulations will be changed to agree with the viewpoints of some of these roads remains to be seen. For the time being, the Bureau believes that the present regulations represent the minimum requirements for all roads, and that if heavy traffic lines choose to enforce additional requirements, they are free to do so.

Considered as a whole, the effects of this legislation on the railroads depend primarily on the wisdom with which the law and the regulations are administered. The administrative work has got off to a fair start; what will happen in the future remains to be seen. In the meantime, the railroads may well keep records of the extra costs incurred in complying with this law. By comparing their signal performance records with respect to safety, they can, within a few years, determine whether these expenditures are justified, bearing in mind the fact that laws have been repealed, and, of more importance in this instance, regulations have been changed, as, for example, those with reference to automatic train control.

What Will the Traffic Bear?—18

If a truck hauls 20,000 lb. of dairy products from Springfield, Mo., to New York at the present rail rate, it will gross \$242. The round-trip cost for this haul will approximate \$480. So to make the trip profitable the truck must pick up a return load. If the truck returns with first class merchandise, 20,000 lb. will gross \$546 for the westbound trip. If it hauls the third class average on its back haul, it will gross \$382.

These figures indicate that the truck will *net* \$308 for the round-trip with an eastbound load of dairy

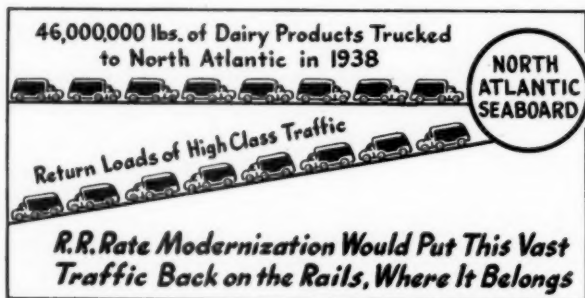
carriers and they usually handle their return loads at less than the rail rates.

More than 46,000,000 lb.—**2,300 carloads**—of **dairy products alone were moved by truck into North Atlantic Seaboard cities during 1938.** Fresh fruits, vegetables, canned goods, and other farm products, such as wool, add greatly to this east-bound volume. And just think of the even higher-rated traffic these trucks take away from the railroads when they fill up for their return movements.

If competitive railroad rates were based on costs, so each category of traffic had to pay its way, and if the Interstate Commerce Commission would invoke the same rule against the trucks that it invoked against the railroads in Docket 27387, the trucks would automatically be declared out of this vast volume of long-haul traffic in favor of the railroads, which, on the basis of true economy, are entitled to handle this business.

The above illustration is typical of an enormous quantity of traffic now moving by truck throughout the United States. This traffic is being hauled by truck primarily because of the railroads' failure to make rates which recognize their cost, and because of their neglecting to insist that the trucks base *their* rates upon *their* costs. It would help, too, if the railroads would modernize their refrigerator equipment. If the rate changes advocated herein were brought about, however, they would produce the revenue necessary to finance the modernization of refrigerator equipment and much more.

In the four-and-one-half months during which this series of articles has been appearing each week in *Railway Age*, many expressions of approval have been received—while not a single criticism of the validity of the point of view expressed in the articles has been offered.



products and a westbound load of first class freight. If its westbound load is third class freight, the net will fall to \$144.

As a rule **these trucks are equipped with mechanical refrigeration and make no charge for refrigerated service.** They also give free pick-up and delivery at both ends. The railroads charge for icing and the consignor and consignee must pay drayage to and from the freight car—so the truck rate, even when it is nominally the same as the rail rate, is actually much cheaper.

Ordinarily, trucks in such movement are contract

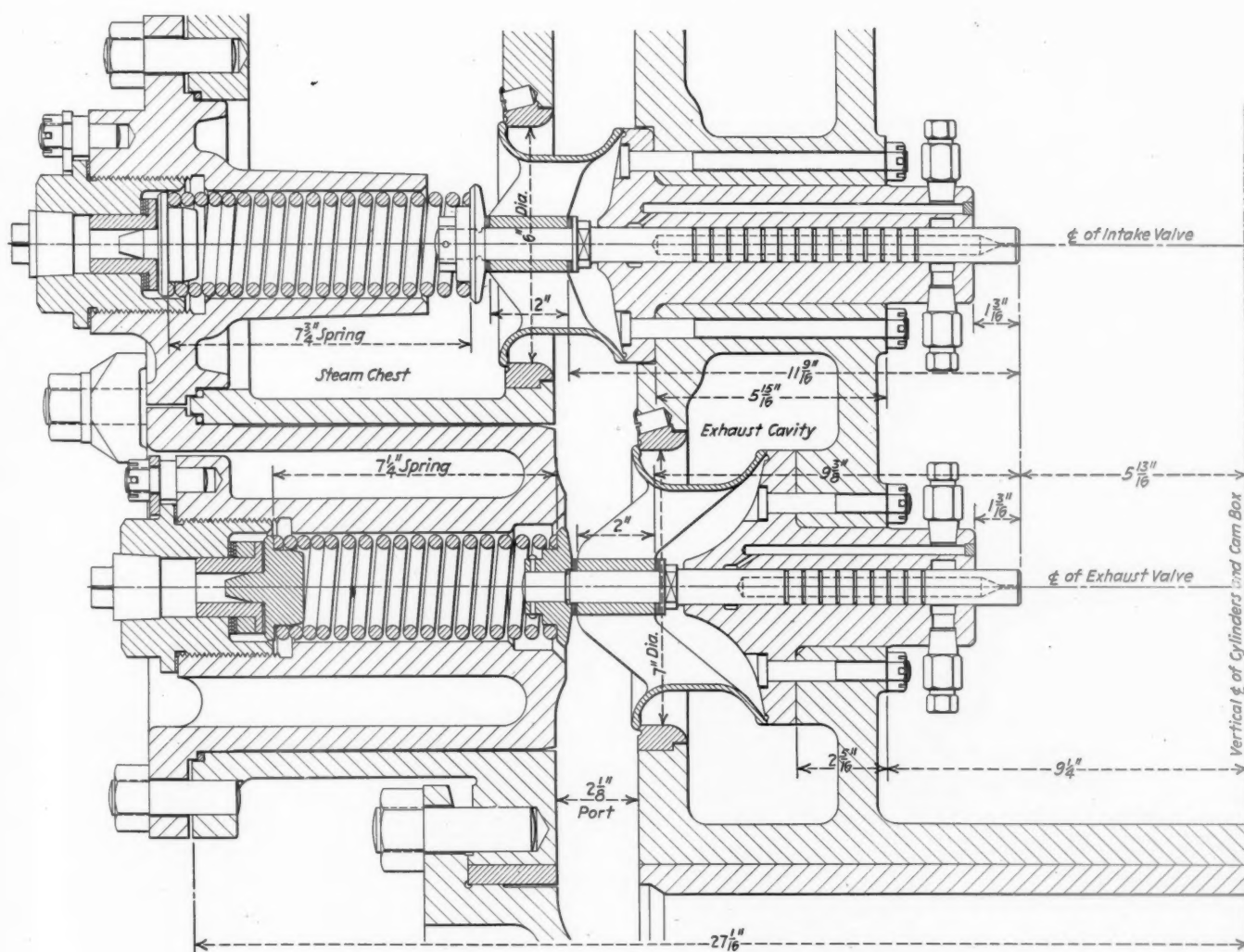
Poppet Valve Gear for Steam Locomotives in America

Two oscillating cam shafts in Franklin system separate intake- and exhaust-valve events — Controlled by single reverse gear

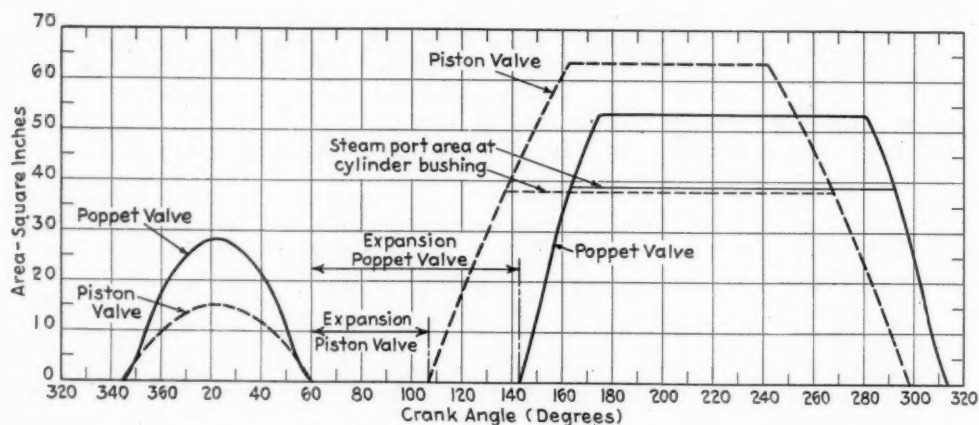
UP to the present time most of the application of the horizontal type poppet valve to the steam locomotive has involved valve motions of two types—a single oscillating cam shaft, driven by a Walschaert or other outside valve gear, and a rotating cam shaft driven from the main axle. The oscillating cam has the advantage of using the customary type of valve motion and cut-off control. Its disadvantage, however, lies in the fact that the two sets of valve events cannot be separately controlled, both intake and exhaust valves being operated by the same cam shaft. In this respect it has the same limitation in its range of practicable cut-offs as the piston valve. The rotating-cam motion permits separation of the control of the admission and cut-off events from that of the release and compression events. Each cut-off, however, requires separate cam profiles for

each of the two sets of valves, and the number of operating cut-offs which can be utilized is limited by the number of profiles.

For the past two years the Franklin Railway Supply Company, New York, has had under development a poppet-valve application and valve-driving mechanism which combines certain of the advantages of the rotary cam and of the oscillating cam, which is aimed better to meet the conditions prevailing in this country where larger locomotives, higher speeds, and higher steam pressures are used than in Europe. Two oscillating cam shafts are employed, one for the intake valves and the other for the exhaust valves. The valve events are subject to control in practically unlimited steps by a single reverse mechanism. The functions of the cam-shaft driving mechanism are analogous to those of the



Details of the Valve Chamber and Poppet-Valve Installation for a 27-in. by 28-in. Cylinder



Comparison of the Expansion and Effective Valve Areas at 25 Per Cent Cut-Off on a 21 1/4-in. by 26-in. Cylinder—The Piston Valve Is 12-in. in Diameter, the Two Intake Poppet Valves 5 1/2-in. in Diameter, and the Two Exhaust Poppet Valves 6 in. in Diameter

Walschaert valve motion, with separate links for the intake- and exhaust-valve cams and a reverse mechanism which, in itself, controls the differential movement of the two sets of link blocks to permit practicable working at cut-offs much shorter than can be utilized with a piston-valve or with poppet valves controlled by a single oscillating cam shaft.

There are three major parts to the Franklin device—the gear box, which contains the valve motion for driving the cam shafts, including the reverse mechanism; the cam box, and the steam chests over the ends of the cylinders in which the poppet valves are installed. The valve installation and cam box follow, in principle and in detail, the developments of the Societe d'Exploitation des Procédés Dabeg on the Continent of Europe and Associated Locomotive Equipment, Ltd., in England. The valve motion is entirely new. It has been developed in collaboration with the engineers of the Lima Locomotive Works, Inc.

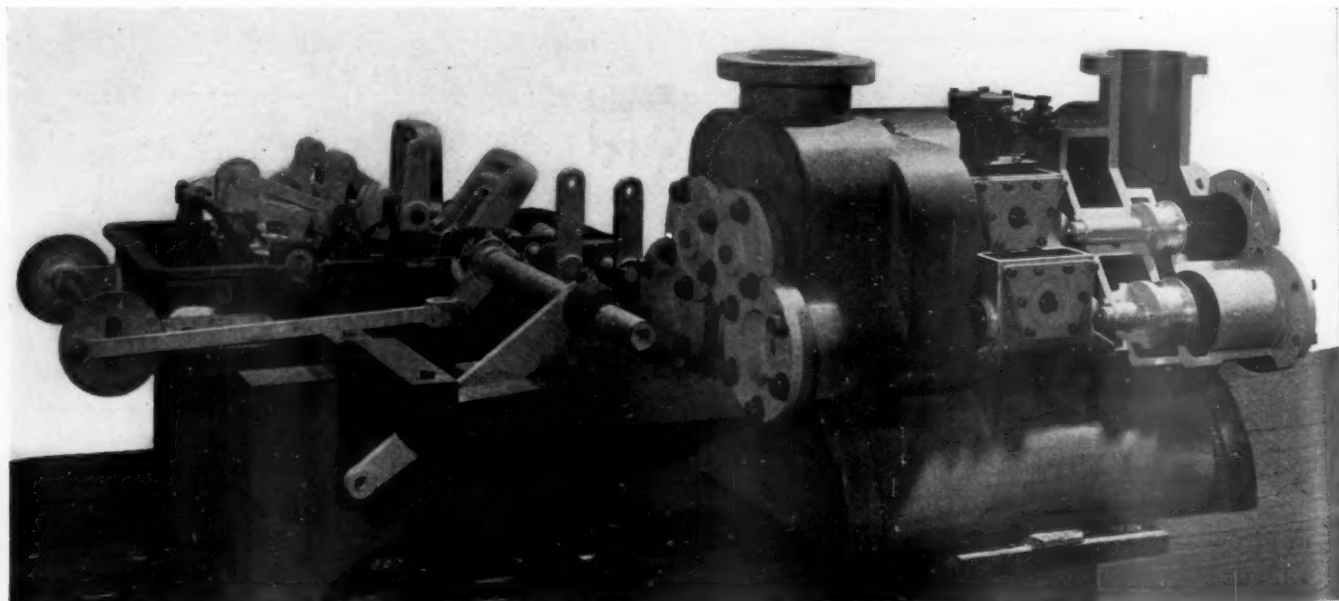
A cam box is placed on top of each cylinder between the two steam chests, which are located over the ports of the cylinder. It contains two oscillating cam shafts, that on the top for operating the intake valves and that at the bottom for operating the exhaust valves. Instead of a single valve each for intake and exhaust, there are two intake and two exhaust valves. In this way the valves are kept small and light. The small valves are easily ground and kept steam-tight and their grouping

around the port results in small cylinder clearance. For instance, on the 27-in. by 28-in. cylinder, the intake valves are 6 in. in diameter and the exhaust valves 7 in. in diameter, and the cylinder clearance is 8.4 per cent, although the port openings are considerably larger than in a conventional cylinder. The steam chests in which the valves are installed are cast integral with the cylinder.

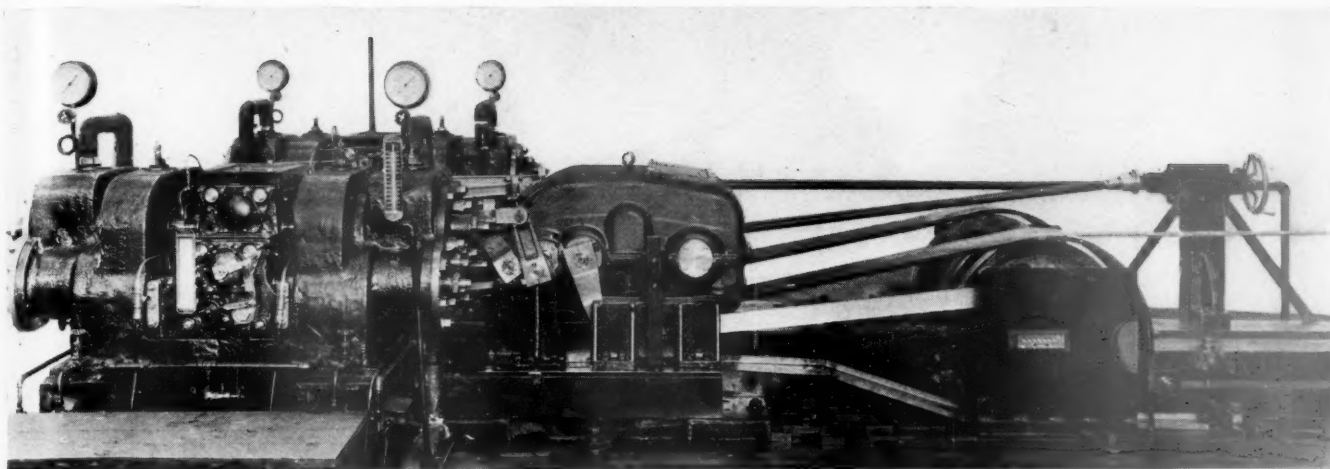
Valve spindles extend through the inner wall of the steam chest and the springs which return the valves and spindles to closed position are located in sleeve caps secured to the steam-chest heads. The intake chamber proper is on the outside of the port and the exhaust cavity on the inner side, next to the cam box. The cam-box tappets line up with the ends of the valve spindles. The maximum valve lift is 1 in. The cam box is lubricated by an oil pump driven from one of the cam shafts.

The gear box is 55 3/8 in. long by 32 3/4 in. wide, and 24 5/8 in. high. It contains the complete valve motion which operates independently the intake and exhaust cams for both cylinders of the locomotive. It may be located between the frames immediately back of the cylinders, or on the deck in front of the cylinders.

The gear box is driven from the two crossheads through union links attached to arms on the ends of the two drive shafts, which enter the box one on each side. Each drive shaft, therefore, oscillates in unison with the crosshead on its side, and the oscillating motions on the right- and left-hand sides are, of course, in 90-deg. phase.



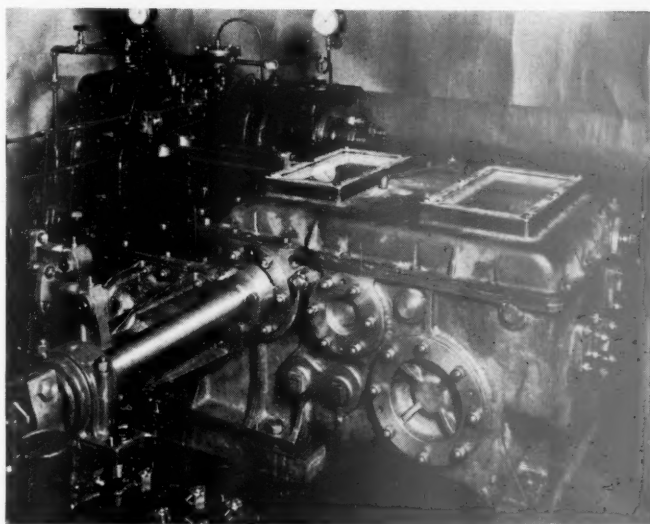
Wooden Model of the Valve Gear, Cam Box, and Steam Chests Exhibited at Atlantic City in 1937



The First Gear Box Installed in the Laboratory with Full-Size Steam Chest and Valve Installation

In the gear box, these two oscillating motions are combined by means of radial links and combining levers into four oscillating motions, two for the intake-cam motions and two for the exhaust-cam motions. The radial links and combining levers perform much the same function as the Walschaert gear links and combining levers. However, in the gear box there are two radial links for intake motion and two radial links for exhaust motion, and these links are mounted in pairs, both the intake link and the exhaust link of each pair moving in unison. The separation of the intake and exhaust motions is secured by a differential location of the respective link blocks in the links. The separate intake and exhaust motions derived from each pair of links are further modified by combining levers, one combining lever for each train of motion from the radial link to the arm operating the cam-shaft connections.

The differential control of the intake and exhaust link blocks is by means of an interrupted gear arrangement which is operated from the reverse gear in the cab. This arrangement moves the link blocks differentially in such a way that when the intake link blocks are in the minimum cut-off position (mid-link), the exhaust link blocks are set approximately for 84 per cent release and 24 per cent compression. This may be called mid-gear forward position. At this point, the interrupted gear train continues to change the position of the exhaust link blocks and to hold the intake-link blocks stationary in the link until mid-gear reverse is reached, at which point the



The Redesigned Gear Box Installed for Test in the Laboratory—Observation Windows Were Cut in the Cover

exhaust link blocks are set for approximately 84 per cent release and 24 per cent compression (reverse motion). From this point, both intake and exhaust blocks move differentially until full-gear reverse position is reached.

It will be noted that this provides a control at the cab reverse gear having a zone of movement from full-gear

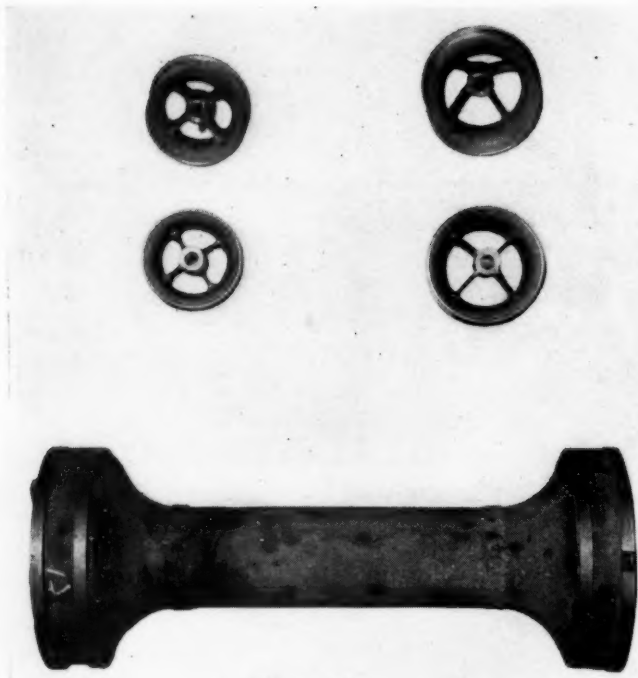
Comparison of Valve Events of Piston Valve with Walschaert Motion and the Franklin Steam Distribution System with Oscillating-Cam Poppet Valves

Cylinders, 21¼ in. by 26 in.; piston valve, 12 in. diameter; maximum travel, 7½ in.; poppet valves—two intake, 5½ in. diameter; two exhaust, 6 in. diameter

Cut-off, per cent	Pre-admission, per cent		Release, per cent		Compression, per cent		Max. Port Area at the Valves, sq. in.			
							Admission		Exhaust †	
	Piston valves	Poppet valves	Piston valves	Poppet valves	Piston valves	Poppet valves	Piston valves	Poppet valves	Piston valves	Poppet valves
Min.	7.26	7.26*	44.1*	83.8	44.1*	24.0	9.59*	16.9	63.3*	48.4
10.00	5.20*	5.20	48.7*	85.5	39.9*	21.5	9.76*	18.0	63.3*	48.4
15.00	3.33*	3.33	54.7*	87.5	34.2*	18.9	11.05*	20.2	63.3*	48.4
20.00	2.46*	2.46	59.6*	88.9	29.9*	17.1	12.73*	24.6	63.3*	48.4
25.00	1.80	1.80	63.9	89.9	26.2	15.6	14.99	28.3	63.3	48.4
30.00	1.47	1.47	67.6	90.6	23.2	14.4	17.40	33.3	63.3	48.4
35.00	1.20	1.20	70.7	91.3	20.8	13.5	20.40	36.8	63.3	48.4
40.00	1.00	1.00	73.7	92.3	18.4	12.1	23.02	39.8	63.3	48.4
50.00	0.67	0.67	78.9	93.4	14.3	10.3	30.8	39.8	63.3	48.4
60.00	0.53	0.53	83.7	94.4	10.9	9.2	41.3	39.8	63.3	48.4
Max.	0.33	0.33	88.4	95.8	7.6	6.7	57.5	39.8	63.3	48.4

* With piston valves cut-offs below 25 per cent are impracticable in operation. The figures indicate the kinematics of the Walschaert valve motion, although, in practice, cut-offs less than 25 per cent are impracticable.

† The areas shown are those through the valve-bushing ports in the case of the piston valve and the areas through the valves in the case of the poppet valves. Actual admission to the cylinders is limited by the area of the port through the cylinder bushing. These are, respectively, 37.9 sq. in. for the piston-valve locomotive and 38.72 sq. in. for the poppet-valve locomotive.



Comparative Sizes of Poppet Valves and 12-in. Piston Valve—The Two 6½-in. Exhaust Valves Weigh 3 lb. 13 oz. and the 5½-in. Intake Valves, 2 lb. 12 oz. Each—The Piston Valve Weighs 132 lb. —Comparative Effectiveness Is Shown on the Diagram

forward to mid-gear forward, a neutral zone from mid-gear forward to mid-gear reverse, and a reverse zone from mid-gear reverse to full-gear reverse. This has the advantage that the engineman can cut back to mid-gear forward with no fear of going into reverse because, should he slightly overrun his gear, no harm will result. Moreover, in the center of the neutral zone, provision is made for automatically cutting in the drifting arrangement, which lifts all the intake valves from their seats to full open position. Experience has shown that this provides ample areas between the ends of the cylinders, thus resulting in free drifting.

The gear box is completely enclosed and the parts operate in an oil bath. Needle bearings are installed

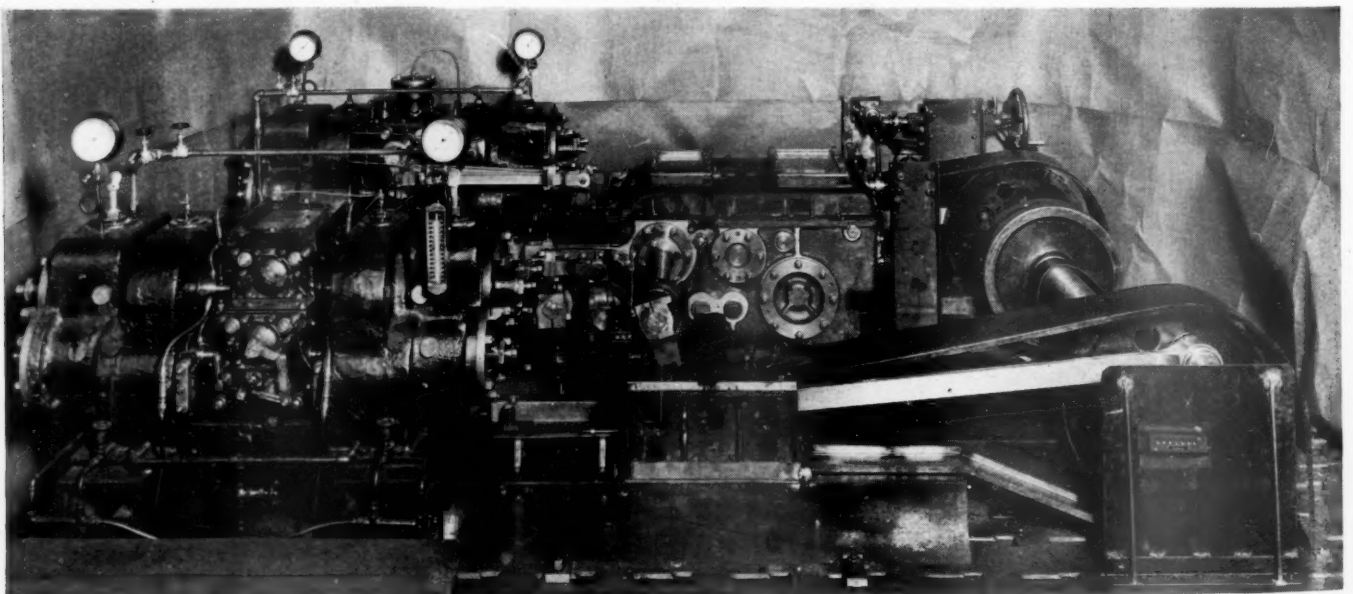
throughout, including roller link blocks. The total weight of the gear box is 3,600 lb. The cam box and the gear box are removed from, and replaced on the locomotive each as a complete assembly. For the purpose of proper valve-setting reference points on the cylinders, the gear box, and the cam boxes permit accurate adjustment of the lengths of gear-box and cam-box connecting rods by means of shims between the bodies of the rods and the stub ends.

The separation of the release and compression events from the admission and cut-off events makes it possible to operate effectively at a minimum cut-off of 7.26 per cent. A comparison of the events produced by a Walschaert valve gear driving a 12-in. piston valve and by the Franklin gear with two 5½-in. admission valves and two 6½-in. exhaust valves, both operating on 21¼-in. by 26-in. cylinders, is shown in the table. This clearly indicates the effectiveness with which release and compression are delayed so that, at the 7.26-per cent cut-off, the release with the poppet valves is practically as late as at 60 per cent cut-off with the piston valve driven by the Walschaert gear, and compression compares with that of the piston valve at between 25 and 30 per cent cut-off.

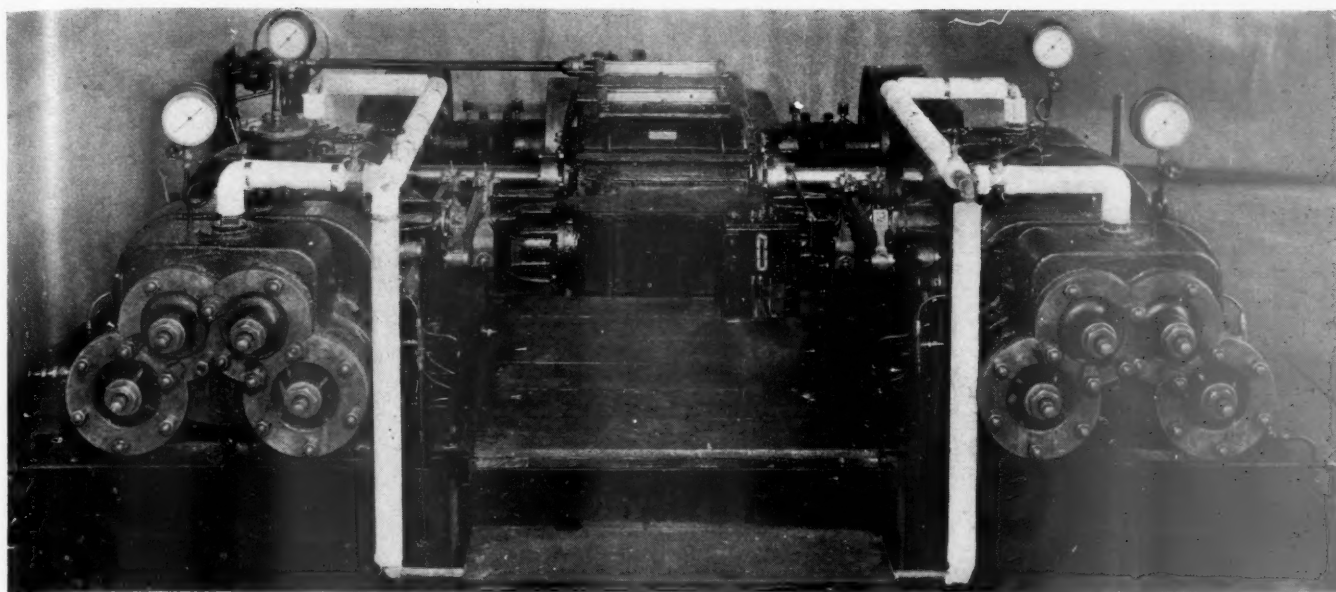
This table also shows the greater maximum area through the intake valves throughout the entire range of cut-offs. The comparative effect of this in port area times the time available for the passage of steam is illustrated for the 25-per cent cut-off.

The relation between intake-valve events and release and compression events is not limited to the values shown in the table. The interrupted gear arrangement and the cams can readily be changed so that practically any desired relation between intake-valve events and release and compression events can be obtained.

The photographs show something of the development of the valve gear from the first wooden model which was exhibited at Atlantic City in 1937. A complete valve gear with cam boxes, full size castings of the steam-chest portions of the cylinders, and a complete installation of intake and exhaust valves was set up in the laboratory and operated by a motor-driven crank shaft and cross-heads. After preliminary trials this equipment was operated 24 hours a day at a speed of 350 r. p. m., equivalent to 83 m. p. h., with 80-in. driving wheels and at



Side View of the Test Plant After the Installation of the Redesigned Gear Box



Front View of the Steam Chests—The Gear Box Occupies a Position Immediately Behind the Cylinder Saddle Which Is Not Included in the Laboratory Installation

times at speeds as high as 500 r. p. m. Except for shut-downs for examination, this was continued until an equivalent mileage, based on 80-in. drivers, of 155,000 had been accumulated.

During this intensive operation studies of the conditions of the parts as well as of the valve and cam operations were made by the use of a stroboscope with suitable cut-outs in the steam-chest walls and windows in the gear box. The stroboscope studies showed clearly where undesirable flexure occurred at high speeds and, as a result, alterations in the design of parts were made to stiffen up the entire motion. Finally, a complete new gear box was designed involving all of the changes which the tests indicated desirable. The result has been that, operating at 500 r. p. m., there is no sign whatever of the slightest distortion or over-travel in the oscillating motion of the cams or in the movement of the valves themselves.

One of the inherent advantages of poppet valves is the small amount of power required to operate them. During the laboratory tests of the development set the horsepower required to operate the valve motion and the valves varied from 0.05 at 210 crankshaft r. p. m. to 3.30 at 500 crankshaft r. p. m. The power absorbed varies only with the speed and is not affected by changes in cut-off at a given speed. The Walschaert gear and piston valve absorbs as much as 50 hp. at 300 r. p. m. The small power consumption of the poppet-valve motion reflects the fact that its parts are produced by precision methods,

that it is completely equipped with anti-friction bearings, and that it is thoroughly lubricated, as well as the fact that the driven parts are of lightweight and have relatively frictionless movement.

The conditions under which the gear box and the cam box and valves of the development set were operated are closely identical with the conditions encountered in actual locomotive operation, with the exception that the valves were not under pressure and passed no steam. Spring loading was added, however, to compensate for the unbalanced area of the valves.

In the tests of the first gear box approximately 90 per cent of the pins and bearings showed no appreciable wear after 155,000 miles and were in condition for further service. The remaining 10 per cent were replaced on account of design changes. All of the parts in the second gear box have covered 35,000 miles to date.

A poppet-valve installation of the type herein described lends itself to the utilization of standard parts so that application to a wide range of operating conditions can be made with but few changes in parts. It has a favorable influence on counterbalancing in the elimination of the return crank and eccentric rod which hang on the extreme end of the main crank pin. Furthermore, the valve motion does not have to be disturbed when taking down and replacing rods. Since the drive is taken from the crossheads alone, the valve motion remains in fixed relationship to the pistons, irrespective of the rolling of the locomotive on its springs.

* * * *



A View of the Union Pacific's New "Model" Storehouse at North Platte, Neb.

I. C. C. Goes in For Self-Reform

Resolves to lead a better life and acknowledges recent criticisms by reorganizing on "functional" lines

By W. J. Taft

Washington Editor



Chairman Joseph B. Eastman

WASHINGTON, D. C.

EXPEDITED procedures in so far as that is possible under the present law are expected to be the principal result of the Interstate Commerce Commission's internal reorganization which was announced just before the *Railway Age* of June 10 went to press and noted briefly on page 1001 of that issue. In other words the commission, precluded by present Interstate Commerce Act requirements from going in for big-time streamlining, might be said to have brought forth what it regards as the best possible "speedline" job—just as some railroads have been forced by depression revenues to limit their "modernizing" to expedited schedules and new paint and sheathing jobs on conventional equipment. Meanwhile, however, the commission's notice points out that the announced rearrangement of work "will be subject to more or less modification if the proposals now before Congress shall become law and thereby considerably change the duties of the commission."

The general nature of the changes, which become effective July 1, indicates an attempt to proceed further with the assignment of duties on a functional basis. Five divisions are to replace the existing seven, individual commissioners are to be given more authority, and the plan of rotating the chairmanship annually on the basis of seniority, which has prevailed since 1911, has been abandoned with the election of Commissioner Joseph B. Eastman for a three-year term from July 1. Also, by setting up one division as an Administrative Division it will be possible to do away with nine of the 11 standing committees of the commission, the two to be continued being the Legislation and the Rules and Reports committees.

Motor Division Gets a Pruning

The Motor Carrier Division will remain as Division 5 but it will be stripped of authority with respect to rates and securities, and the approval of consolidations, mergers, purchases of motor carriers, formulation of accounts,

and enforcement of penalties. These matters will be "functionalized" under other divisions dealing with all carriers subject to the Act. The commission's action in this connection is interpreted as a move to meet railroad criticisms, alleging "motor-mindedness" on the part of the Motor Carrier Division. The committee-of-six recommended that the commission be required to set up its divisions only on functional lines, and won a partial victory when the Senate passed S. 2009 with a provision requiring that any assignment of work "relating to rates, fares and charges" shall be according to the nature of the work and not according to the class of carrier. Also, as pointed out in recent issues of *Railway Age*, S. 2009 has a provision for expediting long-and-short-haul clause procedures and others recommended by the commission in its endeavor to obtain more freedom to work out the most efficient organization and procedural set up, including the power to install something like a writ-of-certiorari routine for the limiting of appeals to the full commission from decisions of divisions.

Shoulder to Wheel, Ear to Ground, Eye to Future

The reorganization plan indicates that the commission while maintaining its reputation as a hard working agency by keeping its shoulder to the wheel has nevertheless found it possible to keep an ear to the ground and an eye to the future. It is not likely that the present Congress would attempt anything in the way of legislation designed to reorganize the regulatory body, but it is no secret in Washington that New Dealers have regarded the commission as a body going to seed amidst the flowering of the newer alphabetical agencies; also, shippers and railroads have been critical of delays which they are convinced have in many cases been unjustified and undue.

As Secretary W. P. Bartel's notice to the public pointed out the reorganization action followed an intensive study by the commission's committee on organization in

conjunction with Chairman Marion M. Caskie. Also, the notice tells how Chairman Caskie "earnestly supported the change, and, by refusing to be considered for the enlarged term, voluntarily curtailed his own service as chairman by six months." It is understood in this connection that Chairman Caskie had felt for some time that there was need for some reorganization of the commission's internal set-up. Furthermore, persons close to the present chairman point out, he recognized the realities of the situation, i. e., that the reorganization move would perhaps have to be promoted by some chairman who would be willing to get it under way early in his term and to eliminate himself from consideration for the position of post-reorganization chairman—thus precluding any criticism from the standpoint of personal ambition or that of excluding his next-in-line colleague from the rotating chairmanship.

Proceeding with these realities in mind, Chairman Caskie is understood to have begun talking reorganization as soon as he came into the chairmanship last January. On this job with him was the above-mentioned committee on organization under the chairmanship of Commissioner Clyde B. Aitchison who succeeded former Commissioner Frank McManamy on that assignment. Other members of the committee on organization were Commissioners Charles D. Mahaffie and John L. Rogers. Chairman Caskie is understood to be highly gratified over the work of this organization committee as well as the co-operative spirit displayed by all his colleagues in connection with the development and promulgation of the revamping plan which will remain as the landmark of his curtailed chairmanship.

A Prophet With Honor Among His Fellows

As pointed out above Commissioner Eastman gets a three-year term as chairman. This is not unprecedented in commission history, since long-term chairmen were the rule prior to the adoption of the post-1911 plan of rotating annually on a seniority basis. Judge Thomas McIntyre Cooley, the first chairman, served from 1887 through 1891 when he was succeeded by William R. Morrison who served first as acting chairman and then as chairman from 1892 until the end of 1897. Martin A. Knapp was chairman from January, 1898, until the end of 1910 when he was succeeded by Judson C. Clements, the first of the one-year-term rotaters. All of the present members except Commissioners Rogers and J. Haden Alldredge have served as chairman for at least one term.

The selection of former Co-ordinator Eastman for the three-year chairmanship has given rise to some speculation to the effect that the commission was putting in a chairman who would be active in the promotion of co-ordinations and the elimination of alleged "competitive wastes" within the railroad industry. It is understood, however, that the commission had no such thought in mind; its action runs to its own internal set up without implications in other directions. Thus any promotional or persuasive work which might be done by Chairman-Elect Eastman would be on his own responsibility.

The New Divisional Set-Up

As pointed out briefly in last week's issue the new set up contemplates five divisions with the senior member of each acting as its chairman—except in the case of the Administrative Division which will be headed by the chairman of the commission. Other members of this Administrative Division (Division 1) will be Commissioners Claude R. Porter and William E. Lee. It will

be charged with the general conduct of administrative matters not otherwise assigned or reserved; general supervision of the reports, records and accounts of carriers; the discovery and enforcement of penalties for violations of law; the institution of investigations as to intrastate rates; personnel supervision and management; and the admission and regulation of practitioners before the commission.

Division 2—Rates, Tariffs and Valuation, will consist of Commissioners Aitchison, Walter M. W. Splawn and Caskie. The plan will be to confine its membership to commissioners who are not assigned to service upon any other division. It will enforce the long-and-short-haul and tariff provisions of the act and related matters; the valuation of the property of the carriers, and the Standard Time Act. It will also have general supervision of informal complaints.

Division 3—Rates, Service and Safety, will consist of Commissioners Mahaffie, Carroll, Miller and Alldredge. It will administer the Safety Appliance and related acts, such as Locomotive Inspection, Transportation of Explosives; emergency directions as to car service; pooling of traffic; and the classification of railroad employees under the Railroad Retirement Act and the Railroad Unemployment Insurance Act.

Divisions 2 and 3, Secretary Bartel explained, "will alternate monthly in hearing arguments within the general scope of the delegation of authority above indicated, and in all cases involving rates, fares, or charges, which have not been reserved to the commission or to some other division."

Division 4—Finance, will consist of Commissioners Porter, Mahaffie and Miller. It will pass upon certificates of convenience and necessity for rail carriers; the consolidation, merger, purchase, lease, operating contract and acquisition of control of carriers, and as to non-carrier control of all carriers subject to the act; the issuance and approval of securities; all reorganization matters under the amendments to the Uniform Bankruptcy Act; Reconstruction Finance Corporation and Emergency Relief and Construction act loans, and matters arising under the Clayton Act.

Division 5—Motor Carriers, will consist of Commissioners Lee, Rogers and Alldredge. It will continue with general authority as to the Motor Carrier Act, except with respect to rates and securities, and the approval of consolidations, mergers, purchases of motor carriers, formulation of accounts and enforcement of penalties, which have been transferred to other divisions, as indicated in the foregoing.

Minor Cases to Individual Commissioners

Provision is made for the assignment to individual commissioners, members of Divisions 2 and 3, of various minor cases as the law now permits, but which heretofore, as a matter of policy, have been reserved for consideration by divisions of three members. Continued is the present plan of assigning many matters of a purely administrative character to individual commissioners, who exercise general supervision of particular bureaus. Applications for rehearing of the action of any division will hereafter be given primary consideration by the division, so that if granted, commission consideration will not be necessary.

Commissioners Eastman, Mahaffie and Splawn have been designated as the Legislative Committee; and Commissioners Aitchison, Porter and Mahaffie as the Committee on Rules and Reports. These, as noted above, will be the only survivors of the commission's 11 standing committees.



The Making of a Railway Officer

Integrity and intelligence cited as more important than experience as superintendents consider personnel and operating problems at Chicago meeting

“WATERED wages are more dangerous and far more prevalent than watered stocks in the railway industry,” President W. L. Fox declared in opening the 45th annual convention of the American Association of Railroad Superintendents, which was held at the Hotel Stevens, Chicago, on June 6, 7 and 8, with nearly 200 members in attendance.

Mr. Fox, who is general superintendent of the Belt Railway of Chicago, said further: “Some concerted action should be taken to bring to light the conditions brought about by decisions of referees of the adjustment boards that are doing so much to crucify the railroads. Payments in wages for work not performed were equal to the railroad deficit in one recent year.”

“The superintendent’s duties,” Mr. Fox continued, “are growing steadily more arduous and complex, as labor difficulties and competition increase. Most railway men look upon the air lines as possible competition for the future, but the airways supply keen competition right now, particularly for mail traffic.”

The convention was addressed by C. E. Johnston, chairman of the Western Association of Railway Executives; J. M. Symes, general manager, Pennsylvania; M. J. Gormley, executive assistant, Association of American Railroads; W. J. Patterson, director, bureau of safety, Interstate Commerce Commission; R. A. Bentley, traffic manager, National Tea Company; and O. B. Higgins, general traffic manager, Montgomery, Ward & Company. Paulino Lopez, chief statistician, National of Mexico, brought greetings to the Association from the workers’ administration of his railway. Col. R. S. Henry, assistant to president, A. A. R., outlined what is being done on some railroads to acquaint the public and particularly the school children with the railway plant. He stated that such activities should be intensified and

asked the superintendents’ aid in bringing this about. C. O. Dexter, yard conductor, Delaware, Lackawanna & Western, addressed the convention on safety.

Men Marked for Promotion When They Are Hired

In welcoming the Association to Chicago, Mr. Johnston asked the superintendents to give full attention to the reports and the discussions and let someone else worry for a few days as to how to make the wheels go around. Each superintendent, Mr. Johnston said, should have his name in the proceedings as taking part in the discussion, as intelligent conclusions are possible only after intelligent discussion. “While the superintendents have taken more than their share of the licking brought about by the depression,” Mr. Johnston continued, “the executives are confident that their courage is not exhausted. These days, a superintendent is called upon to meet practically any emergency, however unforeseen according to past standards of railroading. Recently superintendents have been confronted with and met many such emergencies.”

Mr. Johnston then made brief comments on each of the five committee reports, stating that he found them timely and interesting and particularly applicable to the everyday work of the superintendent. With particular reference to the report on proper training for trainmasters, he said: “Integrity, intelligence and ability are of equal or greater importance to a trainmaster than mere experience. The first three qualities are born in a man and their lack cannot be supplied and made up for, as can lack of experience. For the very reason that such characteristics are innate, the place to start considering a young man for promotion is his application for employment on entering the service.”

In bringing the greetings of the Mexican railroaders, Mr. Lopez stated that, on his line in 1938, the gross earnings reached the highest level in the history of Mexican railroading. "The net operating ratio decreased from 89.75 in 1937 to 87.64 in 1938," Mr. Lopez said, "notwithstanding the fact that maintenance work was intensified, and amounts spent on additions and betterments far exceeded the requirements fixed by the federal government. The experiment of running the lines by means of a workers' administration met with certain difficulties during the first year, but experience has pointed out what changes were necessary to eliminate waste and other obstacles preventing efficient operation."

The Curse of the Transportation Industry

Government subsidy is the curse of the transportation industry in this country, M. J. Gormley told the Association. "Its elimination," Mr. Gormley said, "is highly important for the country. When the time arrives when the user pays all of the freight and no part of it is paid by the taxpayer, there will be healthy and vigorous transportation in this country. The rail carriers are closely regulated, both federal and state. Their greatest handicap today, in addition to the general depression, is unregulated competition with other forms of transportation partially or wholly supported by government. Through the Motor Carrier Act the Interstate Commerce Commission may limit the number of operators on the highways but not the number of units and there is no authority of any kind in the government to prevent unnecessary highway building and waterway expansion which add further to the transportation costs by taxation on the highways and waterways.

"That this situation could exist today is due to the lack of a national transportation policy. This we hope will be corrected to some extent at the present session of Congress. At recent hearings on a Senate Bill it was clearly shown that the farmer or the consumer really receives no benefit from the so-called cheaper transportation by water. No proof was offered whatever that the producer of grain gets one penny more for his product shipped via water than if it was shipped via rail. Certainly no evidence was offered by any consumer that there was any reduction in the price of the product he buys by reason of it having moved via waterway.

Subsidies to Big Shippers \$4.50 per Ton

"As a concrete example of the subsidy to water carriers, attention is called to the fact that from Pittsburgh to the mouth of the Ohio river is 981 miles. Government expenditures on this river have amounted to \$142,350,000, with an annual maintenance cost of \$4,000,000. The record shows that for every ton of traffic moved over this waterway, the cost to the taxpayer is approximately \$4.50 per ton from Pittsburgh to the mouth of the Ohio river. Why should the taxpayer be called upon to pay this \$4.50 per ton for the benefit of the manufacturer?"

Truck Competitors Claim 417 Millions Tax, Actually Pay 13 Per Cent of That

Referring to the claim of commercial motor truck operators that the amount of taxes paid by them is greater than that paid by the railroads, Mr. Gormley pointed out that their estimate of \$417,500,000 for "truck taxes" includes registration fees, dealers' licenses, license plates, operators' and chauffeurs' permits, certification of title, transfer or re-registration, and even fines and

penalties for breach of the law. In it are included all payments by all trucks, including 900,000 farm trucks and a million trucks used for local delivery purposes in and about cities.

"The commercial motor trucking industry," Mr. Gormley added, "consists of trucks of three tons and over and according to the Bureau of Public Roads such trucks pay only 20 per cent of the total truck taxes. Twenty per cent of \$417,500,000 is \$83,500,000, which latter figure would more nearly represent the total taxes paid by trucks, but there should be deducted from this the amounts paid by trucks of three tons and over which are either farm trucks or those operating solely within cities. Therefore, based on this estimate, it can be easily seen that the total taxes paid by the commercial users of the highways, either common, contract or private carriers, will not exceed \$65,000,000 per year. As all investigations have shown, however, this is the group of highway users that is most heavily subsidized.

"Another thing for the taxpayer to remember is that the highway users object to the gasoline taxes being diverted to the general purposes of government but insist that they all be spent for the improvement and maintenance of the highways. In 1938, the railroads paid \$340,000,000 in taxes, equal to 9½ cents out of every dollar of revenue, which is 44 per cent more than was paid for fuel, oil and electric power for operation of the railroads in that year.

"The taxes paid by the railroads which were earmarked for school purposes were in excess of \$100,000,000 in 1938, and are estimated to be enough to educate 1,300,000 children annually."

Discussing the present situation and the marked improvement in efficiency which has taken place in rail transportation in recent years, Mr. Gormley said that the railroads today can handle with the serviceable cars and locomotives now on hand an increase of from 25 to 30 per cent in traffic without any difficulty. With all of the locomotives and cars awaiting repairs put in first-class condition, he said the railroads could handle 45 per cent more traffic than they are now transporting. "The principal avenue for decrease in cost of operation," Mr. Gormley continued, "is through money spent for new cars and locomotives and other improvements that will increase the efficiency of service. All other avenues, regardless of how desirable, that may be open for saving money, including consolidation and co-ordination, can be considered at best as only a small percentage of what can be saved by continuing the modernization of the plant. This cannot be accomplished without restoring railroad credit and that credit cannot be restored without an increase in the net revenues."

What It Takes to Be a Good Superintendent

At a luncheon attended by 442 railway executives, supply men and members of the Association, Mr. Symes spoke on the qualifications of a good superintendent in part as follows: "Insofar as the background of the superintendent is concerned, the most important qualifications are common sense and good business judgment. The following characteristics are essential in the make-up of a good superintendent:

"1.—He must be a leader. To be a leader he must have the respect and co-operation of the employees under him—the respect of the community he lives in and should show more than casual interest in civic affairs of communities on his division. In order to obtain the respect of his employees he must treat them as he likes to be treated by his higher officers. He can be strict and at the same time not 'high hat.' He should not only

welcome but encourage his men to come to him with suggestions.

"2.—A good superintendent must be able to stand criticism and adopt suggestions. If you try to defend a bad job or create alibis you are harming yourself. On the other hand don't be a 'yes' man. If your superior officers advance some wrong ideas, tell them they are wrong and the reasons therefor.

"3.—A good superintendent must not only know operating rules but also know that his men know them. There are too many accident reports issued by the Interstate Commerce Commission involving failures of men to live up to the rules. The superintendent has a responsibility in such failures, just as a teacher might have in the failure of her pupils to pass their examinations.

"4.—A good superintendent must be traffic-minded. He should try and get his employees traffic-minded; to do so he ought to know the industries on his division and he should know their transportation requirements. He should be continually studying ways and means of meeting the competition with which he is confronted. He should know whether the freight schedules meet the particular requirements of the patrons on his division, whether passenger schedules over his division are proper and if trains are making stops unnecessarily or passing up some stations that should have better service. He should also know l. c. l. freight is being delivered too late in the morning or being picked up too early in the evening, and whether at competitive points his railway is on an equal footing with competitors.

"5.—A good superintendent should be an analyst and a prophet; an analyst so he can analyze his operations and plug up the holes where money is being wasted; and a prophet so he can anticipate his requirements from day to day in advance. Always remember from the railroad point of view it is better to build up on short notice than it is to tear down, even though not quite as easy.

"6.—A good superintendent should be research-minded, and research means simply the development of facts from which sound conclusions can be drawn.

"7.—A good superintendent should know politics. He should know the congressmen and senators on his division, the state representatives and the city mayors. With so much agitation these days on the part of public authorities to try and help the railroads he should be able to educate them as to how they can really best provide that help.

"8.—A good superintendent should be able to take his reverses graciously—he gets many of them these days. If he administers discipline for cause and finds himself overruled, he should not, if he is right, take the position the next time of 'what's the use; the cards are stacked against me; when I lose a case it is a reflection on me.'

"9.—Development and training of the younger employees is one of the most important duties of a superintendent. By reason of conditions existing in the railroad industry during the last ten years it has been going through an almost constant tearing down process insofar as forces are concerned. A review of the personnel on nearly any railroad indicates the seriousness of the situation. It is up to you to see that you have some good young men who will be able to step into the supervisory positions as vacancies occur. The very future of your railroad is going to depend largely upon your ability to train the younger employees for the more responsible jobs.

"10.—A good superintendent will educate his employees to perform their duties in a safe way which is, of course, the right way. This is not only a great humane cause but also an extremely attractive one from a financial viewpoint. A review of injury claims of the

railroads of the country or even on your own railroad, will indicate the seriousness of the situation. A \$25,000 claim payment is the equivalent in the net result of about \$100,000 worth of new business."

Why Have Accidents?

The address of W. J. Patterson is abstracted below:

Our investigation of accidents and the widespread dissemination of information contained in accident investigation reports have played an important part in effecting improvements which contribute in no small degree to good safety records established by the railroads. For the entire period from 1911 to June 1, 1939, there were a total of 2,356 accidents investigated, an average of somewhat less than 100 per year. Among the accidents which have been investigated, more than 1,300, or more than 55 per cent, were cases involving operating rules and practices. Of these, there were 144 accidents in which disregard of the rules was involved and in 19 cases there was unfamiliarity with the rules; in 56 cases there was non-uniform or improper understanding of the rules, in 68 cases the authorized practices failed to correspond with the rules, in 64 cases impractical, indefinite or inadequate rules were involved and in 154 cases there was inadequate or lax supervision; 30 accidents revealed a lax or inadequate system of rules examination; in 37 cases the investigations revealed that employees were not examined on the rules, and in 11 cases books of rules had not been furnished to employees.

Adequate rules which are followed by modifications, often result in contradictions in the rules themselves and in consequent confusion among the employees. A rule may be adequate if it is interpreted in accordance with its plain terms, but some special interpretation may be placed on it which makes the rule inadequate to cover its intended purpose.

Modification of a rule was involved in an accident which occurred about seven months ago wherein a yard engine, while standing within yard limits, was struck by a fourth-class train traveling at a speed of between 10 and 20 miles per hour. It was dark but the weather was clear. The front headlight of the yard engine was burning dimly. Rule 93 of this railroad reads as follows:

"Within yard limits the main track may be used, clearing the time of first-class trains five minutes.

"Second, third and fourth class and extra trains must move within yard limits prepared to stop unless the track is seen or known to be clear."

This rule was modified by Rule 93 (a) which reads:

"Switch engines will run carefully, looking out for approaching trains, and will promptly clear main track upon approach of all trains."

While all the employees involved understood the requirements of Rule 93, no two of them agreed as to what Rule 93 (a) meant. The fireman of the yard engine thought his crew should have protected by the use of a fusee. The yard foreman thought that he should have cleared promptly for the approaching train but that no protection was required. The yard helper thought that when the yard-engine headlight was burning dimly a fusee or some other means of signaling should have been employed to flag against the approaching train. The yard engineman's understanding is not known as he was killed in the accident. The engineman of the approaching train indicated that he would not expect the yard engine to protect during the daytime, but he would expect it to do so at night. The trainmaster said that he had not given Rules 93 and 93 (a) any in-

terpretation other than their exact wording, which he considered so simple and complete as to require no amplification.

Since the employees had such a varied understanding of what was required, it appears that their confusion was caused by the modification of the rule. Evidently the wording did need amplification by the officials so that there would be a common understanding. This case indicates inadequate or lax supervision, and furthermore, five days after this accident occurred the Commission's inspectors observed a train, of the same schedule as the one involved in the accident, enter and pass through the same yard limits at a speed considerably in excess of that which would enable it to comply with the yard-limit rule.

Why the Flagman Didn't Go Back Further

A case of unauthorized practice was disclosed by the investigation of a recent rear-end collision between two freight trains on an ascending grade in manual-block territory. The preceding train had stopped because of an undesired application of the brakes just before reaching the manual-block territory. Two attempts to proceed were unsuccessful because of the ascending grade; a helper engine was coupled to the rear end, and after the train had moved several car lengths its rear end was struck by the following train. Although the rear end of the first train had stopped on a three-degree curve where, because of the embankment, it could have been seen a distance of only a few car lengths, the flagman of the helper engine, whose duty it was to provide protection, went back a distance of not more than ten car lengths, although he had ample time to go back to tangent track.

The investigation disclosed that it had been the practice at this point to start trains on the ascending grade without calling in the flagman, depending on the flagman to overtake the rear of the train or allowing him to be left, and no doubt because of this practice the flagman remained close to his train; however, the rules requiring flag protection had not been modified in any respect. In this accident the following train was not operated in accordance with interlocking signal indications; an approach indication was received at the distant signal and a slow-speed indication at the home signal, which indications required that speed should be reduced to not exceeding 15 and $7\frac{1}{2}$ miles per hour, respectively, whereas the speed of this train was about 30 miles per hour at the distant signal and 20 or 25 miles per hour when the engine passed the home signal. The accident occurred 2,138 ft. beyond the home signal when the speed was 12 to 18 miles per hour.

Block System Nullified

The investigation disclosed that because of the ascending grade it was common practice for heavy freight trains receiving restrictive signal indications to be operated at speeds materially in excess of the rates permitted by the rules, and that practice was followed in this case. An officer was on the engine of this train and he was fully aware of this practice and the fact that this train was not being operated in accordance with rules and signal indications. The investigation of this accident also disclosed an important element of rule modification; while nominally a manual block system was in effect on this line, under a timetable rule extra trains were permitted to follow extra trains or helpers not less than seven min. apart. So far as the trains involved in this accident were concerned, this rule practically nullified the

block system. In view of the rule requiring trains to be spaced at least seven min. apart, the engineman of the following train did not think it was necessary to reduce to $7\frac{1}{2}$ miles per hour for the reason that any preceding train, stopping unexpectedly, would have ample time to furnish adequate rear-end protection within the seven min. at its disposal.

This unauthorized practice evidently had at least official acquiescence as an officer was on the engine of the following train in this case.

Some of the things which can happen when improper and unauthorized practices are employed is shown in a report covering the investigation of a rear-end collision between two freight trains a few months ago. The preceding train was assigned to coal-mine service. According to the practice on this road, at the beginning of the trip the crew engaged in coal-mine service received a line-up which conveyed information of the approximate time of movements of other trains at specified points during their tour of duty. Trains mentioned in the line-up were not informed of the mine-run movement. This line-up indicated that the first following train would arrive at the point where the accident later occurred at about 9 p. m., or about 30 min. after the mine-run arrived at that point; however, after the dispatcher had issued the line-up in question a train from another division was delivered to the division involved and this train struck the rear of the mine-run train at 8:37 p. m., or about 23 min. before the mine-run crew expected the first train to arrive. Practically no rear-end protection was furnished by the preceding train.

Line-ups Assumed to Be Train Orders

Under the rules the mine-run train was required to protect, and the employees said they had never been instructed to disregard the flagging rule. On the other hand, it appeared that for many years crews engaged in mine-run service had accepted line-ups on a parity with train orders and as authority to occupy the main track while engaged in switching operations at mines and also when necessary to obstruct both main tracks, without providing flag protection, when the information contained in the line-up indicated that no train was near. This procedure had been followed until it had become common practice, and officers had not criticized mine-run crews for failure to observe the flagging rule. On the other hand, the superintendent stated that the management was not a party to a violation of this rule; however, when a rule is commonly violated, with the full knowledge of operating officers and without question or corrective action by them, such officers must be considered to be parties to violation of the rule. This accident is a glaring example of improper and unauthorized practices resulting from lax supervision.

These are all specific accidents disclosed by investigation of accidents by the Bureau of Safety and covered in detail by published accident investigation reports. The principal purpose of these accident investigation reports is to make available information which will render it possible to prevent the occurrence of similar accidents in the future, and careful consideration of these matters together with appropriate action thereon by members of this Association should contribute materially toward that end.

What the Shipper Wants

Traffic Managers Higgins and Bentley spoke to the Association on the needs of the shippers, and Superintendents Berkeley Ward of the Pennsylvania and C. A.

Fink of the Missouri Pacific outlined some of the things the railways are doing to meet those needs.

"The shipper can get what he wants only by the greatest co-operation with the traffic and operating departments," Mr. Higgins said, "and the following are his principal needs:

"Better l. c. l. freight service, either by improvement in operation or by a better co-ordination between rail and truck. It is service, not rates, that has diverted so much business to the forwarding companies in recent years. They provide fast carload service to some central distribution point and fan out by truck for 100 miles or more, which fits the shippers' needs.

"We have to ship by carload or truckload as much as possible, and we must have the privilege of stopping in transit to unload, which privilege is freely offered by the trucks and not by the railways.

"The largest single commodity on the freight claims list is furniture. **My company buys, sells and ships a large volume of furniture, but we do not buy it with the idea of selling it to the railways because of damage en route.** There is no profit in such business for us. These claims result largely from lack of proper inspection and re-bracing after stopping in transit. Much of this damage could be eliminated by the use of steel strapping."

Mr. Bentley cited a number of new fast merchandise trains now operating in various parts of the country. "These services have had the effect of returning much merchandise traffic to the railways," Mr. Bentley said, "and are moves in the right direction, but there is much more to be done. **Second morning delivery between Chicago and such points as the Twin Cities, Omaha, Cleveland and Pittsburgh is most unsatisfactory** to us, as overnight delivery should be possible. Shippers would be glad to co-operate by loading the cars earlier if necessary to permit early evening departure of the trains.

"The seventh morning delivery set up by the 'gentleman's agreement' between Chicago and the Pacific Coast is also unsatisfactory. Only recently, **we discovered that a car of fresh peas consigned to us was actually in Chicago ready for delivery on the sixth morning. We needed these peas badly, but the delivering line refused to release them** and we were compelled to buy peas at a much higher price to supply our stores in order that the agreement should not be violated.

"Since we were recently given the privilege, under rule 10, of loading many different commodities in one car, much traffic has been returned to the rails. The pooling of traffic should also be given consideration by the railroads. More efficient terminal switching would also provide better service and bring traffic back to the rails."

A cross-section of the important phases of railway operation was given in the five committee reports presented to the Association. Committee No. 1, of which M. J. Reynolds, supervisor terminal operation, Baltimore & Ohio was chairman, reported on securing the maximum utilization of steam and Diesel-electric locomotive in terminal operation. This report outlined data obtained from a study of 224 terminals on 40 different railways and, with this as a working basis, produced the seven most vexing of the current problems in terminal operation, and gave recommendations as to their solution.

Committee No. 2, of which E. C. Gegenheimer, superintendent, Pennsylvania, was chairman, reported on operating lessons from train accidents. This report consisted of an exhaustive and information study of the accident reports of the Interstate Commerce Commission, giving numerous statistics, and recommendations as to the neces-

sary action on the part of the superintendent to reduce such accidents.

Committee No. 3, of which E. J. Stubbs, superintendent, Erie, was chairman, considered the current problems involved in handling l. c. l. freight. This report gave a summation of the replies to an extensive questionnaire submitted to a large number of railroads. It also contained a bibliography of articles and other literature issued on this subject in recent years.

Committee No. 4, of which O. R. Teague, assistant superintendent, Seaboard Air Line, was chairman, reported on the possibilities and limitations of main-tracking freight trains. This report cited several instances of successful main-tracking and gave specific recommendations as to the best means to employ to secure the maximum benefit from main-tracker operation.

Committee No. 5, of which W. E. Lamb, general superintendent, Missouri Pacific, was chairman, reported on the selection and training of trainmasters. Giving the primary duties of a trainmaster, the report outlined the type of man, both from experience and education, who would be most likely to perform such duties efficiently. These reports will be abstracted in detail in early issues of the *Railway Age*.

New Officers

The election of officers resulted in the following:

President: C. B. Petticrew, superintendent, St. Louis Southwestern, Pine Bluff, Ark.

First Vice-President: F. B. Whitman, assistant to general manager, Chicago, Burlington & Quincy, Omaha, Neb.

Second Vice-President: P. M. Shoemaker, superintendent freight transportation, New York, New Haven & Hartford, New Haven, Conn.

Third Vice-President: G. T. Coleman, general superintendent transportation, Canadian Pacific, Montreal, Que.

Fourth Vice-President: R. J. McDermott, assistant general superintendent transportation, Missouri Pacific, St. Louis.

O. R. Teague, assistant superintendent, Seaboard Air Line, Charleston, S. C., was elected a director for a three-year term, and E. T. Howson, western editor, *Railway Age*, was re-elected as director for three years. F. O. Whitman was re-elected secretary-treasurer, and Chicago was selected as the 1940 meeting place.

* * *



Southern Pacific Store Men "in Whiskers and War Paint" for the Opening of the Golden Gate International Exposition at San Francisco, California, in March, 1939

Air-Conditioning for Perishable Produce*

Design of facilities for the holding and ripening of fruits and vegetables must be based on requirements as to temperature, humidity and ventilation

FREQUENTLY it is necessary for railroads to provide suitable facilities for storing and treating fruits and other perishable produce, which must be properly air conditioned and otherwise designed to perform the desired functions. In any study of the problems involved in air-conditioning buildings provided for these purposes two distinct phases of the proposition must be given consideration, namely, (1) storage, during which time an attempt is made to arrest the natural ripening processes, and (2) controlled ripening which has as its objective the conditioning of the produce for the market.

Cold Storage

The first phase requires a cold storage plant in which the desired atmospheric conditions are obtained by the use of mechanical refrigeration and the necessary equipment for air circulation or ventilation. Before designing facilities for the storage of any particular product, it is necessary to have a knowledge of the following factors:

- (1) Temperature range at which the commodity can be successfully stored
- (2) Proper range of relative humidity
- (3) Necessity for ventilation
- (4) Necessity for air circulation, without ventilation
- (5) Quantity of commodity to be handled at one time

For the cold storage of fruits and vegetables, it is highly important that the temperature in storage rooms be held fairly constant. Variations of two or three degrees above or below the desired range are in most cases too large. Temperature control is usually more readily accomplished in large rooms than in small ones if both are filled to capacity. This is due to the latent effect produced by the larger mass of material, including that in both the commodities in storage and in the building. Refrigeration is thus stored up with the result that temperature changes occur more slowly. For this reason, small storage rooms generally require closer attention than large ones. However, owing to the variety of products to be stored, and the fact that it may be necessary to segregate them, small rooms may be required. Pears, for instance, should be stored by themselves and should not come into contact with other products. Odors are readily absorbed by pears and may impair their flavor.

The relative humidity of the air in storage rooms has a direct relation to the maintenance of the quality of the products held in them. If it is too low, wilting is likely to occur in most fruits and vegetables, especially those of the leafy types; if it is too high, it favors the development of decay, especially if accompanied by a considerable variation in temperature. For most fruits that are stored commercially, a relative humidity of 80

to 85 per cent gives the best results. For leafy vegetables and root crops, the relative humidity should be about 90 to 95 per cent and for other vegetables it should range in general from 85 to 90 per cent.

In considering the storage of fruits and vegetables, it should be realized that these commodities are alive and therefore carry on within themselves many of the processes characteristic of all living things. Unless the relative humidity is high, they will give off moisture to the surrounding air and most of them in time will become shriveled and wilted even at 32 deg. F.

So far as is now known it can be stated that, with respect to most fruits and vegetables, cold storage is beneficial rather than harmful. Bananas are an exception to this rule for if held at temperatures below 56 deg. F. they become chilled after which they will not ripen properly in a ripening temperature.

The length of time in which the majority of fruits can be held in storage varies considerably. For instance, citrus fruits, such as oranges, lemons, grapefruit and limes, can be stored successfully for periods ranging from a few weeks to four or five months, while berries, with the exception of cranberries, can be held in storage only for a very short period. Moreover, such fruits as cherries are not adaptable to storage at all, very seldom being held more than one or two days. Likewise, peaches are generally not adaptable to cold storage. However, if they are sound and well matured, but not over ripe, they could possibly be held for a period not exceeding two weeks with little or no bad effect on the flavor, texture or appearance of the fruit. The storage requirements for vegetables vary considerably. Some vegetables, such as the leafy variety, are very seldom held in storage, while other varieties, such as potatoes and onions, can be held for considerable periods.

Controlled Ripening

Air conditioning designed to accomplish the "controlled ripening" of perishable produce requires a plant involving the control of humidity, air circulation, temperature and ventilation. The results obtained in ripening produce depend to a large extent upon the care that is given the product during cold storage. In order to provide the proper facilities for the ripening of any particular product, it is necessary to have a knowledge of the following factors:

- (1) Temperature range at which the commodity must be maintained for ripening
- (2) Proper range of relative humidity
- (3) Necessity for ventilation
- (4) Necessity for air circulation, without ventilation
- (5) Total quantity of commodity to be held in the ripening room at one time
- (6) Rate at which the commodity will be moved in and out of the ripening room

* From a report presented before the March, 1939, convention of the American Railway Engineering Association by the Committee on Buildings.

Most fruits or vegetables are mature or ripe when harvested, requiring no special artificial ripening process or treatment, and are held, either in common or cold storage, for only a limited time. There are a number of exceptions, one being the banana, which is one of the fruits that must be shipped to market in a green condition, as the ripened product is soft in texture and cannot be handled without injury. Another of the fruits that is harvested in a semi-ripe state is the pear. Both of these fruits must be submitted to an artificial ripening process or treatment before they are ready for the consumer's market.

In the ripening of bananas the controlling factors are generally recognized to be temperature, humidity and ventilation. The most desirable temperature range for this purpose lies between 62 and 68 deg. F. However, little, if any, harm appears to result to hard green fruit when it is subjected to temperatures 5 to 10 deg. higher than this range for a period of a half day or so, if a very high humidity is maintained. For fast ripening, experiments have demonstrated that a decided advantage is obtained by raising the temperature quite rapidly, even as much as 3 deg. per hour, until the fruit itself is warmed up to the desired ripening temperature. Heavy condensation of moisture on the fruit during the warming period appears to be beneficial and is an indication that ample moisture has been provided. For holding ripe fruit, temperatures not lower than about 56 deg. are recommended.

Humidity Important

Humidity is the second most important factor in ripening bananas. High humidity is needed to prevent excessive shrinkage, especially at the warmest ripening temperatures. Where the air velocity provided by forced circulation is rapid, high humidity is especially important to prevent the fruit from becoming dry. If fruit must be held over in the ripening rooms after it has begun to color the very high humidity recommended for green fruit should be reduced moderately to prevent the product from becoming mouldy or excessively tender. A relative humidity below 70 to 75 per cent is not recommended even for ripe fruit because of the excessive shrinkage which results.

Numerous careful tests have been conducted to determine the effect on the shrinkage of bananas of different conditions in the ripening room. These tests show an average shrinkage of 3.8 per cent during a six-day ripening period in a room held at a constant temperature of 67 deg. F., with the relative humidity ranging from 75 to 80 per cent. Fruit in another room, in which the conditions were strictly comparable in every respect except that the relative humidity was kept at 90 to 95 per cent, shrank 2 per cent during the same six-day period. Low humidity is sometimes the cause of delayed and irregular ripening in bananas. Transpiration in this fruit is regulated by microscopic openings in the peel, which are known as "stomates." These openings tend to close in a dry atmosphere and it is thought that in so doing they retard respiration and ripening changes.

During the ripening process bananas give off carbon dioxide, an inert gas, and, in addition, small amounts of volatile esters. It has been fully demonstrated in practice that this fruit ripens more readily and uniformly if the gases that it gives off are confined in the ripening rooms instead of being dissipated by ventilation.

Within strict limits, the period required for ripening bananas can be extended or shortened to meet the requirements for distribution at the most desirable stage of ripeness. Under average conditions, this period can-

not be reduced to less than about three or four days, or extended beyond about eight or ten days, without resort to drastic treatment liable to affect the quality and saleability of the fruit adversely. In other words, the ripening treatment can be controlled to accomplish fast ripening (three to four days average), medium ripening (five to seven days average) and slow ripening (nine to ten days average).

Under certain conditions, ethylene gas is used to produce uniformity in ripening bananas and to accelerate the process. The gas is an anesthetic, but in the highly diluted form in which it is used for ripening, it does no harm to workmen. As released from the drum, ethylene gas is inflammable; hence open flames must not be allowed in ripening rooms at the time it is being discharged from the drum. The mixture of ethylene gas and air is neither inflammable nor explosive, except at very much higher concentrations than those recommended for banana ripening.

Ripening Pears

To obtain the flavor and texture that are characteristic of late pears, it is often necessary that this fruit be ripened after cold storage. If kept constantly at cold-storage temperatures some varieties do not ripen at all. This is particularly true of Buerre Bosc, Howell and sometimes of Doyenne du Comice. Varieties such as Beurre d'Anjou, Winter Nelis and Beurre Easter will usually ripen at low temperatures if given ample time, but even in the case of these species the quality is superior when warm temperatures are provided during the final stages of maturation.

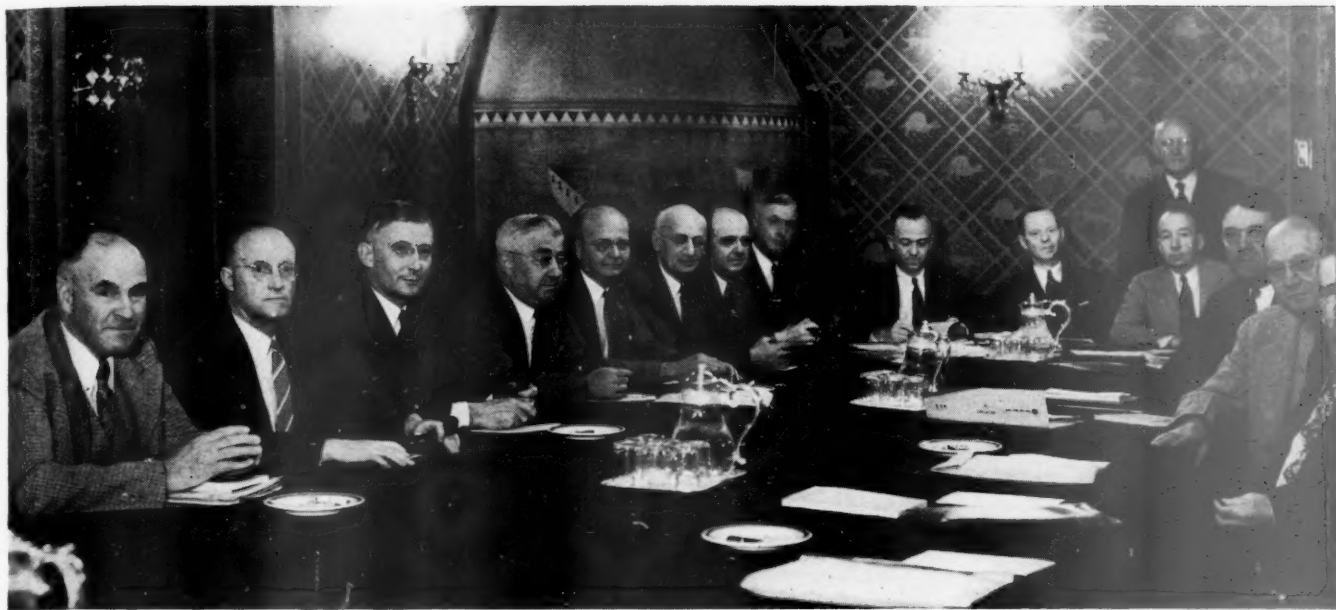
Late pears can be removed from cold storage and ripened at any time during the normal life of the variety. All late pears ripen well at temperatures between 60 to 70 deg. F. Ripening rooms, such as are used for conditioning bananas, are satisfactory for late pears. To obtain the best results with pears it is recommended that ripening rooms be maintained at 60 deg. F. and that the proper humidity be provided either by keeping the floors in a dampened condition or by the use of commercial humidifiers. Ripening rooms do not need ventilation. They function best when kept closed at all times.

In the event that regular ripening rooms are not available, pears can be ripened at ordinary living room temperatures. They usually ripen out-of-doors, provided the prevailing temperatures are around 60 deg. F. When late pears are merchandised during the cold months of the year they frequently fail to ripen properly, and it is recommended that ripening facilities be provided during these months.

Equipment

The equipment required for the treatment of fruits and vegetables depends on the commodity to be handled. When providing facilities for this purpose, it is first necessary to construct the type of room that will result in the most efficient and economical operation. This means that careful consideration must be given to the construction of the room, especially to the type of insulation that is to be used. Where the room is located in an old building, the best type of insulation is that which is laid up, such as cork board or rock cork. Loose insulation that is placed in between the joists and rafters cannot be utilized with the same certainty, because of the fact that it is difficult to place in certain locations. This type of insulation can, however, be used successfully in new buildings. The amount of insulation that

(Continued on page 1047)



Members of General and Advisory Committees of the Purchases and Stores Division, A. A. R., at the Annual Meeting in Chicago

Left to right: D. C. Curtis, chief purchasing officer, C. M. St. P. & P.; O. A. Donagan, general storekeeper, B. & M.; E. W. Walther, general storekeeper, B. & O.; C. B. Tobey, general storekeeper, L. V.; U. K. Hall, general storekeeper, U. P.; E. J. Lamneck, purchasing agent, Penna.; C. H. Murrin, general storekeeper, L. & N.; A. S. McKelligon, general storekeeper, S. P.; J. Yzewyn, assistant to secretary; A. L. Sorensen, (chairman) stores manager, Erie; E. J. Walker, assistant purchasing agent, A. T. & S. F.; W. J. Farrell, secretary; J. C. Kirk, assistant purchasing agent, C. R. I. & P.; L. P. Krampf, supply agent, M. P.; J. L. Bennett, purchasing agent, C. of Ga. Obscured: A. C. Mann, vice chairman; G. A. Goerner, general storekeeper, C. B. & Q., and E. A. Clifford, general purchasing agent, C. & N. W.

Railway Supply Forces Renew War on Waste

Making workers material conscious key-note of Chicago meeting—Price extras—Enlist manufacturers in conservation move

TWO busy days were spent by railway purchasing and stores officers in Chicago this week and the foundation laid for a renewed fight on waste in and ignorance about rail transportation when Div. VI—Purchases and Stores—A. A. R. held its first convention for the entire membership in two years. More than 350 railway officers attended the meetings, not counting a large gathering of representatives of railway supply manufacturers, thirty committees of the Division presented reports on subjects including price extras, purchasing in standard packages, simplification of standards, and loss and damage to company materials in transit.

The meeting was opened by addresses from J. L. Beven, president of the Illinois Central and by the Division's chairman, A. L. Sorensen, manager of stores, Erie; N. C. Naylor, vice president, American Locomotive Company, and vice president of the National Railway Supply Manufacturers Association; and S. D. Down, vice president, Westinghouse Air Brake Company, and past president of the Railway Supply Manufacturers Association also spoke briefly to the convention.

Mr. Beven stressed the indispensability of cooperative work in advancing the interests of the railroads, both internally and in their relations with labor, ship-

pers and the public and both charged the railway supply officers with responsibility for promoting cooperation and outlined some of the opportunities within the supply organizations for accomplishing it. Cooperation, he stated, is an over-worked word but it is not an over-worked activity and infinitely more can be accomplished for the railroads through a spirit of cooperation than by controversy and combat.

Mr. Sorensen sounded the keynote of the convention by referring to the vast expenditures made by the railroads for materials, supplies and equipment and stressing the importance of educating employees to become "more material dollar minded" by acquainting them with the money value of the materials, both as to their cost and the expenditures incurred in their transportation and other handling. When it is realized, he stated, that the average gross revenue for hauling a ton of freight 100 miles is less than one cent and that materials must be purchased from this revenue, the necessity for constantly checking expenditures is apparent. Evidence was presented during the convention that practically all materials of importance are now subject to extras when non-standard quantities are purchased and that these extras range from 50 cents to three dollars per unit of material in some cases and as high as \$100 per ton for other

material. He also brought out that the number of sizes and varieties of materials is still excessive and requires simplification to assist the railroads in purchasing in more economical quantities. The Division has discovered 700 sizes of steel tubing in use on railroads and pointed to the reduction of engine wheel designs from 142 to 10 recommended designs, as an example of what can be accomplished. The cooperation of manufacturers is now being enlisted in the work of establishing standard packages containing recommended quantities of material and this year for the first time the Division undertook to outline a definite plan by which it will cooperate with railway executives in educating its employees, shippers and the public about the railroad problem.

In keeping with the practice of several years standing the Division again held a competition among employees in purchasing and stores departments for papers on railway supply work. The two papers awarded the honors were presented to the convention by their authors R. R. Metzfeld, laborer, C. M. St. P. & P., Milwaukee, Wis., and J. W. Trent, laborer, store department, C. B. & Q., St. Joseph, Mo. The convention also heard the winners of last year's competition present their papers since no convention was held last year. The winning papers will be published in part in later issues.

Other papers entered in this year's contest by L. W. Pratt, clerk to division storekeeper, Erie, Dunmore, Pa.; R. E. Godley, foreman, stores department, Illinois Central, Memphis, Tenn.; W. R. Prior, general clerk, office of general storekeeper, Canadian National, Winnipeg, Man.; J. Simoncik, stockman, stores department, C. B. & Q., 56th and Ogden Ave., Cicero, Ill.; E. J. Denny, stock clerk, office of division storekeeper, B. & O., Ivorydale, Ohio, received honorable mention.

The address of Mr. Sorensen and reports presented by committees during the convention follow in part:

Address of Chairman Sorensen

In acquiring materials through purchase or otherwise consideration should be given to proper specifications and inspections so that equal opportunity is accorded all manufacturers; likewise consideration must be given to the total labor and material costs. It never pays to spend two dollars in labor to save one dollar either in investment or in the first cost of materials. Materials should be acquired in time to meet the requirements of the using departments, based on quality prices. A long sighted view point between buyer and seller brings repeat orders and confidence, and develops business friends for the buyer.

The fact that material is money converted into a less mobile asset should not only be understood by the supply branch, but equally by the consuming departments. Educating employees to become more "material dollar minded" by acquainting them with the money value of materials is profitable. The method used in this education is immaterial so long as it produces results and increases in the employee that all-important desire to assist his employer in their mutual problems. No source of waste should be considered too small to be important. The net income available annually from the reclamation and repair of materials and the sale of scrap also demands continuous studies.

When it is realized that the average gross revenue for hauling a ton of freight one mile is less than one cent, the necessity for constantly checking expenditures is apparent. Each time an order is to be placed, the number of ton miles of revenue freight that must be hauled to pay for the material should be considered.

The reduction in average annual expenditures of Class I railroads for materials from about \$1,400,000,000 for the ten years ending in 1930, to \$600,000,000 in 1938 is not conducive to national prosperity. Healthy railroad business, permitting normal railroad purchases, is a requisite of national prosperity.

The material and supply balance of the Class I railroads on December 31, 1920, was over \$755,000,000, as compared with the present balance of about \$300,000,000. The reduction since 1920, although somewhat affected by price trends, has provided over \$450,000,000 additional working cash for the railroads. Assuming 15 per cent per annum as a minimum carrying cost, including interest at 6 per cent, depreciation, obsolescence, taxes and insurance, the saving in carrying costs alone on this reduced investment of over \$450,000,000 is substantial and indicates material control methods. This improvement is partly the result of the deliberations and conclusions reached at meetings of this division of the A. A. R.

Report of General Committee

The Special Purchasing committee continued its activities under the supervision of the vice-president of the association, embracing general matters relating to industries, coal prices, etc. The activities and accomplishments dealing with bituminous coal were presented in the 1938 and 1939 reports of the committee.

The contest committee reviewed the papers entered in the contest for this year, and the two papers chosen as the best were entitled Progressive Storekeeping, by Robert R. Metzfeld, laborer, C. M. St. P. & P., Milwaukee, Wis.; and The Costly Economy of Storing Coal, by John W. Trent, laborer, store department, C. B. & Q., St. Joseph, Mo.

Meetings of regional committees were held during the last two years and were well attended. Consideration of greater adherence to the adopted recommendations of the Division has been continued and the recommendations are kept actively before the members.

A report presented by the Committee on Research and Standards will be given further consideration during the year by a joint committee composed of representatives of the interested divisions and sections. At the suggestion of the vice-president of the association, consideration was given by all divisions to a revision of the Plan of Organization and Rules of Order, to conform to the basic plan of organization of the association. Minor revisions were made, and the revised rules will be submitted for approval.

A report of current prices as of March 1 and October 1 of each year is obtained from 10 railroads for the Mechanical Division. A joint committee of representatives of this Division and of the Mechanical Division made a complete revision of the forms and methods employed by railroads in submitting the data. A report of the Committee on Public Relations was recently approved by the General Committee and the recommendations were considered so valuable that it was decided to release the report at once to members. A special committee was appointed to work jointly with a committee from the Freight Claim Division on Loss and Damage prevention.

The subject of trade discounts has been considered by the regional groups, and it was the general recommendation that the individual carriers contact the various suppliers to obtain equivalent discounts. Considerable progress has been made on this subject, and it is suggested that further efforts be made to extend the practice of equivalent discounts. A report of the A. R. E. A. Sub-committee on Classification of Water Service Material was submitted to this Division for review and recommendations. The report was considered by the Material Classification committee, and the General committee appointed a representative to present the views of this Division.

The General committee has elected to life membership in the Division H. A. Anderson, formerly special agent, purchasing department, Penna.; J. W. Gerber, formerly general storekeeper, Southern; H. H. Loughton, formerly assistant to vice-president,

Southern; F. W. Mahl, formerly general purchasing agent, S. P.; J. F. Marshall, formerly assistant to purchasing agent, Alton; O. Nelson, formerly general storekeeper, U. P.; W. J. Sidey, Sr., formerly general storekeeper, B. R. & P.; K. R. Stewart, formerly storekeeper, A. T. & S. F.; and F. W. Taylor, formerly purchasing agent, S. P.

Information obtained from the railroads on store expense, is summarized and on file in the secretary's office. A special committee was appointed to review the purchases of the association, including stationery and printing, to determine possible economies. Study of the subject was completed and the report submitted to the vice-president. The report included several recommendations which have already been put into practice.

Report on Material Classification

A material classification is essential to the proper and economical operation of the purchasing and stores departments. While material classifications need not necessarily be of the same composition or make-up, the A. A. R. Standard Material Classification meets storehouse requirements, the setting up of classified balance sheets and the allocation of responsibilities in both the purchasing and stores departments.

It is recognized that non-A. A. R. standard classifications possess the same value as the A. A. R. classification, but there is virtue in uniform basic observance of a common classification, and the trend in any change of practice on those railroads which do not now follow the A. A. R. standards should be to give particular consideration to the adoption of the A. A. R. standard. A classified balance sheet can be effectively used as a means to control investments in materials and any railroad not now preparing one, should consider its adoption. Soda ash, soda aluminate and boiler compound belong in Class 47, in the general class of chemicals. Aluminum cylinder head casings, aluminum dome casings and aluminum safety valve casings for use on locomotives should be carried in Class 17.

The chairman ex-officio and the chairman of this committee reviewed a report of the A. R. E. A. Committee on Classification of Water Service Materials, presented at Chicago on March 15, 1938. The chairman ex-officio was present when the report was submitted, and his statement is presented in part as follows:

Water Service Material

The report presented by the A. R. E. A. Committee on Classification of Water Service Material is a constructive contribution to a desirable co-operative effort. Purchasing and stores officers subscribe in full to the substance of the conclusions in the committee report as enumerated. Users should be the best judges of the quality of materials necessary for their work. Specifications for materials should be provided to the maximum extent by users, it being realized, however, that everything for railroad usage cannot be covered by specifications and it is, therefore, necessary to buy proprietary brands. To the greatest extent possible, the purchasing department should be accorded the opportunity to buy on a competitive basis rather than to be restricted to one specific seller.

As to unused water service materials being promptly returned to stock, purchasing and stores opinion is in full accord as to the value of such a definite and continuous procedure. This opinion applies to the general run of all maintenance of way and structures materials, excluding tonnage items like rail and crossties, initially supplied to line or road locations which remain unused and are available for redistribution. Preferably all such unapplied materials should be carried at designated concentration stores.

The preparation and maintaining of up-to-date surplus lists, as recommended in the committee's report, for the purpose of utilizing materials available to the fullest degree and proportionately avoiding purchases, is concurred in as a means of achieving such objective. Purchasing and stores experience with the general run of surplus reports, however, is that they often become too commonplace and routine to meet the objective. To supplement and reinforce the needs it is proposed that water service supervisory forces periodically, and particularly when some specific need is present, visit stores or other stock concentration locations and review available materials in the face

of definite needs. Such visits will often result in materials not planned on, but nevertheless suitable for needs, being found and used.

With respect to (1) comment in the committee's report that the A. A. R. Standard Material Classification does not segregate and classify materials and supplies so that statements and classified materials balance sheets specifically reflect aggregate expenditures made for materials used in connection with water service and the aggregate value of such materials on hand, and (2) the recommendation for subdivisions of primary material classifications which would segregate water service materials from unrelated materials: The A. A. R. Standard Material Classification with all its present detail has limitations in disclosing accurate statistical data as to material costs of any major department of a railroad, much less of any specific branch of service, such as water service, within a major department. Accordingly, it is suggested that statistical data on the purchase and consumption of key items of water service materials such as the 14 items listed in the report (which data we fully agree is pertinent to progress in the supplying of adequate, economical and proper-quality water service to railroads), be compiled from water service department and purchasing-stores records independently of the classified materials balance sheets.

As to suggestions made concerning sub-divisions of several present material classes in connection with water service materials and supplies, there is one in particular which the Purchases and Stores division may consistently consider and that is a consolidation of water treatment chemicals now carried in A. A. R. Class 47 and the inclusion of boiler compounds in A. A. R. Class 37.

The practice on various railroads of ordering materials according to the Stores Department classification number is intended to expedite handling by the stores department by eliminating or minimizing "draw-offs" where the full run of materials ordered are handled by different sub-departments, at stores. The merits of such an arrangement are dependent on the collective advantages on individual railroads where the practice may be followed and the decision as to the net value rests with the individual railroad. In cases where it is considered jointly advantageous for a railroad to group material on requisitions by material classes, it is appropriate that copies of the material classification used be placed in the hands of the materials ordering departments.

The committee's report was prepared by C. B. Hall (chairman), stores manager, Penna.; S. L. Bouque, assistant to general storekeeper, S. P.; S. A. Hayden, assistant purchasing agent, and general storekeeper, M-K-T.; W. S. Riach, chief clerk to general storekeeper, A. T. & S. F.; and C. H. Murrin (chairman ex officio) general storekeeper, L. & N.

Discussion

Differences of opinion developed over the committee's recommendations to include all boiler feed water chemical in Class 47 and aluminum castings in Class 17, and these recommendations were omitted from the report.

Report on Forest Products

Suggestions were received covering the handling, storage and care of lumber, segregating various sizes at the mill in loading; the best methods of preventing checking; the loading, handling, storage and distribution of ties and the mechanical handling of both lumber and ties. It was decided to appoint a subcommittee to study this subject. It was the opinion of the committee that the moisture content is a local matter owing to varying climatic conditions, and it is suggested that railroads having trouble with the moisture content of lumber should confer with neighboring railroads.

Adherence to A. A. R. Lumber Standards was discussed. Since the General Committee has under consideration A. A. R. Standards and Specifications, the further consideration of this subject should be deferred for the present. Fractional sizes in ordering lumber should be handled by each individual railroad as there are few roads using the same sizes and the use of car framing is declining rapidly.

A resolution from the Railway Tie Association about hauling

ties by trucks was discussed and the chairman was instructed to appoint a committee to meet with a committee from the Tie Producer's Association to obtain more detailed information.

Specifications for temporary grain doors were considered previously by the committee and have been referred to the Transportation division. When final specifications are approved and issued by the Transportation division, these specifications should be included in the report of our Forest Products committee.

The report was prepared by A. J. Neault (chairman), assistant general purchasing agent, C. & N. W.; D. R. Elmore, assistant to general manager, Fruit Growers Express; F. W. Holt, assistant purchasing agent, Erie; L. W. Kistler, superintendent treating plants, St. L. S. F.; J. R. McGrenera, general tie & timber inspector, A. T. & S. F.; J. E. McNelley, chief tie & lumber supervisor, A. C. L.; C. C. Warne (chairman ex-officio), purchasing agent, N. Y. C.; E. H. Polk, assistant purchasing agent, S. P.; G. H. Robison, purchasing agent, U. P.; F. A. Schack, fuel and timber agent, G. N.; F. C. Sheehan, assistant purchasing agent, N. Y. N. H. & H.; W. A. Summerhays, manager, forest products bureau, I. C.; James Young, assistant purchasing agent, Penn.

Discussion

In answer to a question as to the reason why the A. A. R. standards for lumber have not been put into practice, as explained in the report, it was stated that the objections from one of the largest users of railway fir made general adherence impractical for the present.

Report on Inventories

The suggestion was made during the year that the material stock report should be revised to show fewer classes of materials. Since the report was changed last year, effective with reports filed for the semi-annual period ending June 30, 1938, to facilitate the use of the report by railroads not using the A. A. R. material classification, the committee believes that the report should remain in its present form until experience shows that

W. L. Wheeler, assistant general storekeeper, C. & N. W.; O. A. Donogan (chairman ex-officio), general storekeeper, B. & M.

Report on Loss and Damage

This being a new subject for the division the committee decided to report the conditions as they were found. Reports from 71 railroads indicate that it is customary on many railroads to have representative of the store department examine damaged and unclaimed goods for the purpose of obtaining for the railroad such material as is adaptable for its work and use. Such materials are handled by the stores department on 52 railroads. On 15 railroads it is handled by the freight claim department and on one railroad it is handled by the roadway and mechanical departments.

Where the purchasing and stores department handles such materials, stores department representatives usually examine all material offered for sale, taking the material that is adaptable for railroad use. On some railroads the freight claim agent reports such materials to the purchasing and stores department and the stores department reports what it can use. It is the opinion of the committee that full advantage is not taken of the purchasing and stores department outlet for the disposition of salvaged material, including that resulting from derailments, etc.

On 61 railroads, disposition of such material by sale is handled by a representative of the freight claim department. On eight railroads, it is handled by the purchasing department, acting as sales agent.

Proper Packing and Loading

Suggestions were received as to the improvement in methods as obtained from various railroads covering shipments of materials received by the purchasing and stores departments from vendors. Some of the suggestions are as follows:

Securely crating stoves and furniture will prevent many being damaged and having to be sent to the shops for repairs. Where damage has been caused by improper packing, the manufacturer's attention is called to the fact and suggestions made. Pipe fittings or plumbing fixtures should not be shipped in burlap bags

Consolidated Material Stock Report for Semi-Annual Period Ending December 31, 1938

Regions	Total Number of Railroads Reporting	Total of Average Miles of Road Operated	Percentage of Class I Railroads Reporting (Based on Mileage)	*Total of Average Monthly Actual Disbursements to Closed Accounts and Sales	*Total Value of all Unapplied Materials on Hand End of Semi-Annual Period	*Total of Average Day's Supply on Hand End of Semi-Annual Period
New England Region.....	6	6,339.16	92%	2,910,531	11,024,058	113
Great Lakes Region.....	26	25,746.84	99%	10,617,917	47,011,745	133
Central Eastern Region.....	20	24,003.12	96%	11,977,207	55,484,627	139
Poconos Region.....	3	5,418.81	89%	3,136,156	10,704,787	102
Southern Region.....	21	38,652.19	100%	8,775,248	37,094,617	127
Northwestern Region.....	13	45,485.73	99%	8,813,114	43,772,504	149
Central Western Region.....	17	61,117.12	99%	16,784,707	69,819,107	125
Southwestern Region.....	13	23,100.04	90%	4,770,389	22,596,237	142
GRAND TOTAL.....	119	229,863.01	97%	67,785,269	297,507,682	131

*Does not include reports from two railroads which did not furnish Grand Totals of both Disbursement and On Hand figures.

further reduction in classes is necessary or advisable. Following is the summary of the material stock report as of December 31, 1938:

Reports showing store expense data for each railroad for 1937 are on file in the secretary's office. Those reports are being summarized and it is expected that completed figures will be available in the near future for such use as may be desirable.

The special committee was assigned to study annual inventory accounting data and its study will be continued to develop recommendations during the ensuing year.

A basis of valuing second hand material was considered in 1935 and 1936. In view of the information obtained during that period and the result of the canvass of Class I railroads, as reviewed by the committee, it is deemed inadvisable to make any recommendations at this time.

The report was prepared by J. F. Riddle (chairman), analyst, stores department, Penna.; W. E. Brady, stores accountant, A. T. & S. F.; J. P. Hogan, chief accountant, Erie; S. C. King, traveling material accountant, F. E. C.; F. J. McMahon, general storekeeper, N. Y. C.; D. H. Reed, traveling storekeeper, Sou;

where the fitting is threaded on the outside and no pipe fittings should be shipped in burlap bags. Better and larger lumber should be used in crating and more use should be made of corrugated cardboard.

Loading steel bars or other heavy products loose in cars with pails of paint or other similar materials, results in loads shifting and causing damage to other lading. Better loading or blocking would prevent this. Some shippers use too frail containers. Merchandise shipments containing barrels of paint, oil, etc., are often not sufficiently blocked and barrels get loose and roll, causing damage to other lading. Glassware, tinware, oils and greases, paints or other items of similar nature should be packed by shippers in suitable containers to prevent breakage.

Shipments of paints and oils to outlying points should be well braced and if in other than the original shipping containers, fragile shipments should be marked to insure more careful handling. Sometimes ignition cells and batteries are damaged by moisture. If manufacturers would wrap batteries in oiled paper, or line the containers with oiled paper, it would prevent damage. Loss of soda ash through damaged sacks can be remedied by laying

a row of sacks lengthwise a few inches from the side of the car, then placing the next row, with one end on the longitudinal row and the other end on floor. This causes any shifting to be toward the center of car, preventing tearing of sacks against the car sides.

A large number of shipments of lamp and lantern globes are broken upon arrival. The interior of the cartons in which the glassware is packed is generally subdivided with thicknesses of fibreboard, but the cartons are not strong enough to withstand exterior pressure. Ordinary fibre cartons used for this material have a 200 lb., per sq. in. resistance. We recommend 275 lb. Pallets or skids should be used more extensively in shipping material to prevent shifting or damage enroute. The importance of correct marking, including the obliteration of old marks, should be stressed.

A study should be made on non-returnable containers used for shipping heavy materials. Containers of 30 gal. capacity, loaded with 750 lb. were damaged and it was necessary to specify 5 gal. containers at a slight increase in cost. Some of the major oil companies use band steel, approximately 20 gage in thickness and 1¼ in. in width. This band steel is placed on the top and bottom of drums and protects drums from turning over or becoming otherwise damaged.

The attention of local agents should be called to the importance of giving the same care to the handling and stowing of company material as that accorded commercial shipments. The committee cooperated with the Freight Claim Division, in the report.

The report was prepared by U. K. Hall, chairman, general storekeeper, U. P.; H. N. Mellor, commissary buyer, Penna.; and W. R. Culver, superintendent of stores, C. & O.

Report on General Reclamation

During the year the committee maintained contact with the Mechanical and Engineering divisions to follow to conclusion items referred to them in 1938, with the exception of coil spring which was withdrawn as further study indicated that the percentage of reclaimable coil springs with broken ends was so small that it was believed that all such springs should be scrapped. Additional items were referred to the Mechanical section.

Track Tools

Efforts have been made to obtain tolerances for and methods of repairing track tools from individual railroads but the results have not been satisfactory. The committee has requested the A. R. E. A. to adopt tolerances of wear and repair methods for all tools covered by standard specifications and plans.

One road is using the sludge from the acetylene generator plant for the treatment of water in its water treating plant. Fifty pounds of wet sludge is equal to 22 lb. of dry hydrated lime, and this road has been able to reclaim approximately 22,000 lb. of wet sludge per month, at a saving of approximately \$68 per month. The wet sludge is syphoned from the acetylene generating plant to the water treating plant which is located nearby so that there is no labor expense in handling.

Rail Anchors

A small hydraulic press has been designed by one road for reclaiming rail anchors, and the road was able to reclaim a large number of rail anchors in 1938, at a substantial saving over the purchase of new anchors. Other roads are reclaiming other types of rail anchors by closing the jars under air or hydraulic presses and in some cases two-piece anchors are reclaimed by matching up a second-hand non-driven part with a new part.

Box car corrugated steel ends are cut by acetylene torch through the corrugations and the upper and lower halves separated. The remaining corrugated plates are then pressed cold under a hydraulic press and the plates used for patching open top steel cars.

On one road grain and coal doors are made from 1½ in. scrap longitudinal siding and 1¾ and 2¼ in. scrap flooring recovered

from house car repairs. The usable material is sorted out, placed on lumber wagon trailers, hauled to the designated location, and placed on wooden horses. Steel scrapers remove foreign matter from the tongues and grooves and defective bolts and nails are removed before the lumber is cut and ripped to proper sizes. It is then reloaded on lumber trailers. The lumber is hauled in lumber trailers from the cleaning operation to the wood mill, where it is cut to standard 7 ft. lengths and tongues and grooves are ripped off on boards used for outside boards on grain doors. The lumber is then moved on lumber carts to the bench, where grain doors are assembled, wooden cleats applied, nailed together and stenciled.

The Division's representatives on the committee were A. L. Prentice (chairman) manager scrap and reclamation, N. Y. C.; I. C. Bon, superintendent scrap and reclamation, Wabash; E. R. Casey, superintendent reclamation, C. & O.; T. J. Hegeman, superintendent scrap and reclamation, C. B. & Q.; W. P. Stewart, supervisor scrap and reclamation, I. C.; Peter Young, superintendent of reclamation, A. T. & S. F.

Discussion

It was suggested from the floor of the convention that one of the economies of reclamation that is often overlooked is the avoidance of a sales tax on material that would otherwise have to be purchased new.

Report on Railroad Scrap

Having completed a thorough analysis last year of ferrous scrap classifications of 67 railroads to determine what changes, if any, were necessary to increase the return on the scrap, the committee continued the study this year to include non-ferrous items. The result did not indicate any changes that would be beneficial but did develop that most of the 29 railroads using their own classifications showed a striking similarity to former A. A. R. standards. Evidently their specifications have not been brought up to date. Detail comparisons of the classifications with the A. A. R. standard, showing the predominating variations, with the conclusions of the committee, are shown in a statement. The committee is of the opinion that the A. A. R. Standard Scrap Classification as adopted, is broad enough to cover all railroad needs for all markets and that the use of this classification will bring maximum returns for scrap sold.

Non-Ferrous Scrap

While, in the majority of cases, non-ferrous scrap is handled about the same on all railroads, the work is not always centralized with the ferrous scrap handling. On ten railroads reporting, seven concentrate it at their central ferrous docks, and handle at large shop points. Handling at a central ferrous dock results in less direct supervision, puts all scrap under one head, assures better control of costs, and eliminates double handling.

Some items to be stripped of attachments are fuse blocks, small coils, switches, lamp sockets, iron valves with small brass bushings and seats, and locomotive cab and coach fittings. While some of this material can be economically stripped by shearing, the majority is not profitably stripped by hand. Of all railroads reporting, five strip all items and three do so where it is economical. Some railroads do not have a market for items with attachments. Some recommend that all items be stripped to insure correct disposition. Generally speaking, non-ferrous scrap can be stripped economically to A. A. R. standard classifications.

Handling Facilities

Cranes and shears represent the most effective facilities for handling scrap, particularly because of the low operating and maintenance expense in relation to the high productivity in both volume and value. The electric overhead and gantry cranes have proved most suitable for central or concentrated scrap handling operations of 2,000 net tons per month or more, and locomotive steam, gasoline or crawler-type portable cranes for the smaller and scattered scrap layouts. Some of the railroads made actual tests on electric gantry and overhead types, as well

as locomotive steam and gasoline types, to determine the maximum loading speeds on the same classes of scrap under approximately the same conditions, and the results were tabulated as follows:

Loading Speeds of Various Type of Cranes Used in Handling Scrap
(Based on actual test made with bridge in standing position and minimum trolley travel to develop maximum speed)

	Road A	Road B	Road C	Road L	Road A Over- head	Road D Over- head	Road M Over- head
Gantry and Overhead Electric	Gantry	Gantry	Gantry	Gantry	Over- head	Over- head	Over- head
Capacity	10	10	10	15	5	15	12½
Magnet	65"	65"	65"	65"	65"	65"	65"
Distance Rail to Rail	34	85	37	105	80	90	81
Length of Rails...	1465	2200	450	1004	500	400	431
Main hoist travel speed (Feet per min.)	100	68	60	75	80	60	56
Bridge hoist travel speed (Feet per min.)	400	300	400	350	300	350	350
Trolley hoist travel speed (Feet per min.)	300	300	200	400	200	125	174
Net tons of sorted scrap loaded per crane hour in standing position on the following classes of scrap:							
A. A. R. Class 24 (Regular run of sorted scrap)...	162	105	89	130	107	172	50
17	163	105	67	155	89	150	88
16	191	125	71	120	107	160	78

NOTE.—Above tests were made under most favorable conditions to show only the maximum loading speed the crane was capable of. No allowance is made for average working speed which will run 25% to 33½% under these figures.

To encourage the adoption of shears in all scrap handling operations, the committee had the member railroads submit their actual performance sheets showing what shears they are

using, the scrap can be loaded directly into a car for shipment or can be dumped in a bin or pile of the same classified scrap at the dock.

Practically all roads studied are selling wheels, axles, borings and turnings, tires, scrap rail; in fact, all scrap that accumulates currently and does not require extensive sorting or preparation, direct from origin point, thereby eliminating the expense incurred if such scrap is mixed with the accumulation of other scrap and moved to a central dock.

One railroad has done notable pioneering in the field of handling scrap from origin point. The M. of W. section point layouts have been lined up to correspond with the make-up of the supply train. At section points, all assorted scrap is handled by a caterpillar straddle crane, with 39-in. magnet, into compartment cars, while a second caterpillar crane, with magnet, handles all scrap rail, second-hand rail, and scrap switch material. M. of W. scrap is handled and sorted at section points by section men. This railroad also handles all car and locomotive scrap from point of origin. If these points have cranes they do their own loading; otherwise, the scrap is also picked up by the supply train. All full carloads of scrap are shipped direct to market from origin point and scrap to be torched or sheared is prepared at local points. Serviceable material accumulated at section points is picked up by the supply train and set out at the first store point, to be returned to the general store in regular cars for distribution. Such items, as brake beams, air brake parts, etc., needing special repairs, are sent to the centralized repair points.

Another railroad has revised its scrap handling methods since January 1, 1939, and is now sorting both shop and track scrap at the point of origin. The only scrap that now moves to the central dock is the less-carloads of sorted scrap from engine houses, car repair tracks, and M. of W. sections on line, which is shipped in low side cars with wood dividers, and is transferred at the dock by magnet cranes into straight cars or into storage bins without further sorting. Any scrap that can be

Loading Speeds of Various Types of Cranes Used in Handling Scrap

(Based on actual test made in standing position and minimum swing travel to develop maximum speed)

	Road E Steam	Road E Steam	Road G Steam	Road K Steam	Road J Steam	Road E Gasoline	Road H Gasoline	Road D Steam
Steam and Gasoline Loco.	Steam	Steam	Steam	Steam	Steam	Gasoline	Gasoline	Steam
Capacity	(Tons) 30	10	20	22½	33	7½	20	15
Magnet	(Size) 55"	45"	43"	45"	55"	35"	45"	45"
Length of Boom	(Feet) 50	40	50	50	60	35	40	46
Main Hoist Travel Speed (Ft. per min.)	200	100	145	150	100	85—1st gear 167—2nd gear 314—3rd gear	160	115
Type of brakes	Steam	None	Steam	Steam	Steam	Air	Air	Air
Travel speed on rails (Ft. per min.)	440	440	335	500	440	1760	700—High 275—Low	300
Net tons of sorted scrap, loaded per crane hour in standing position on the following classes:								
A. A. R. Class 24 (regular run of sorted scrap)	80	65	60	50	78	25	131	36
A. A. R. Class 17 (regular run of sorted scrap)	60	55	70	50	161	22	150	62
A. A. R. Class 16 (regular run of sorted scrap)	80	65	85	65	125	25	145	56

Note: Above tests were made under most favorable conditions to show only the maximum loading speed the crane was capable of. No allowance is made for air. Average working speed which will run 25% to 33½% under these figures.

Note: Road "D" also loaded per crane hour:

C 24 (Shear Sep.) 50 NT (Loaded with magnet).

C 24 (Shear Sep.) 67 NT (Loaded by pans or buckets. Saved 25% crane time and lost 10% shear time as compared to magnet).

C 12 50 NT

Note: Descriptive speeds shown are "without magnet."

using and the results they are getting from them. The results were presented in tables.

Handling at Point of Origin

Practically all of the Class I railroads are still following the A. A. R. recommended practice of moving the bulk of their scrap from point of origin to a central dock for sorting, preparing and final disposition. However, it is being recognized that unnecessary handling of scrap decreases its value. For this reason the transferring of scrap from origin to a central dock is an item of expense that is receiving careful study. Progress has been made on some railroads in keeping the various grades of scrap separate in shipping to the central dock. This can be accomplished by skids, trailers, push cars, scrap cars, crane buckets or pans, etc., which can be placed adjacent to the origin of the scrap, and, when loaded, can be moved in bulk to the central dock. When possible to classify without additional han-

dling, the scrap can be loaded directly into a car for shipment or can be dumped in a bin or pile of the same classified scrap at the dock.

loaded in solid cars at line points or at different locations does not move to the dock but is sold direct. Scrap which can be accumulated in carload lots in locomotive and car shops adjacent to scrap docks is sorted, prepared and loaded for direct sale at the particular location where it originates. Scrap is sorted into containers and dumped into outbound scrap cars without coming to the scrap dock. Less-than-carload scrap from locomotive and car shops adjacent to the scrap dock is sorted, prepared and placed in wooden skid boxes located in each department where it originates. When full, these boxes are moved by electric lift trucks to the scrap dock where the scrap is transferred direct to either outbound cars or bins without further sorting. Second-hand and reclaimable material from line points is sent to the general store in regular material cars and not put in scrap cars.

The report was prepared by W. J. Sidey (chairman), supervisor reclamation, L. V.; E. J. Becker, assistant general storekeeper, S. P.; D. D. Canavan, general foreman reclamation,

B. & M.; J. J. Collins, supervisor scrap & reclamation, Erie; James Deery, assistant purchasing agent, Penna.; J. T. Goodloe, division storekeeper, Sou.; J. C. Kirk (chairman ex-officio) assistant purchasing agent, C. R. I. & P.; R. R. Kane, division storekeeper, L. & N.; C. E. Reasoner, assistant district storekeeper, M. K. T.; T. H. Ryan, assistant purchasing agent, Wabash; J. A. Sims, purchasing department, C. & N. W.; H. E. Warren, manager purchases and stores, G. M. & N.; H. C. Young, purchasing agent, D. & H.

Discussion

The committee's report was preceded by a motion picture recently taken of scrap handling on the C. M. St. P. & P., which illustrated this company's method of sorting maintenance of way scrap locally and shipping it direct to market instead of through a central scrap handling yard. The discussion which developed after the presentation of the committee's report centered almost entirely around the operations illustrated in the motion picture and a spirited controversy was precipitated by questions from the floor challenging the economy of local sorting and handling as practiced on the Milwaukee as compared with centralized methods. Questions were raised about the cost of the cranes used in this operation, the amount of usable material left in the scrap, the ability of local forces to sort to specifications and the value of the scrap sold. Spokesman for the C. M. St. P. & P. vigorously defended the economy of that road's present method of handling.

Report on Pricing Materials

Prices should be established in a central bureau or bureaus which are better informed as to the terms of purchase, routing, etc., than is possible when the work is distributed. From these central bureaus price bulletins should be issued as price changes require. The prices should include freight and express charges; special discounts; federal, state and local taxes and inspection costs, etc. This method should be followed, regardless of the method of applying the prices so established.

To simplify the clerical work, so far as practical, material should be priced in units of "each" regardless of how purchased. Prices per dozen, pound, hundredweight, lineal feet, etc., should be converted into price "each" or "piece." The extent to which this practice is followed should be left to the judgment of the individual railroad.

Direct Pricing

Direct pricing was adopted as a recommended practice at the 1932 annual meeting. It has been put into effect with varying degrees of thoroughness on about 21 per cent of the railroads. Efforts to determine the cost of installation and of operation have been, for the most part, unsuccessful. Few railroads have any data and the replies from those reporting actual figures are inconclusive and widely at variance. The committee recognizes the merits of the direct pricing system, also the short-comings of the price-book or price-card system, and the varying conditions on different railroads, which have much to do with the successful operation of one system or the other. Direct pricing, as practiced on a few railroads where a sincere effort has been made to put it into effect, is more accurate than any other system thus far proposed.

The report was prepared by L. L. Studer (chairman), district storekeeper, M. P.; N. B. Coggins, general storekeeper, Sou.; E. G. Walker (chairman ex-officio) assistant general purchasing agent, G. J. Hunter, traveling material supervisor, A. T. & S. F.; G. E. Tallmadge, assistant general storekeeper, G. N.

Discussion

Representatives of several railroads objected to the Committee's recommendation that bulletins of prices should be issued and the report was changed to substitute the word data for bulletins in view of preference by some railroads for pricing direct from invoices.

The Committee's statement that direct pricing is more accurate than other methods met with vigorous objections from

several roads including the Burlington and re-opened the controversy over the relative merits of indirect and direct pricing but the report was accepted with the explanation that it represented only the opinion of the committee instead of the majority opinion of the division.

Report on Forecasting Needs

Experience during the past year has only served to verify the correctness of the statements contained in the last report and to emphasize the necessity for following the recommendations and suggestions.

Forecasting of requirements to co-ordinate procurement with actual needs presents special difficulties in the case of materials required for program work, A. F. E., and maintenance of way jobs. The economical procurement of such materials can only be as successful as the information furnished is accurate as to kinds, quantities, and rate of usage. The more accurate and comprehensive these statements are, the greater are the economies that will be effected. Realizing that the information must of necessity come from the using departments, the General committee sent copies of last year's report to the Mechanical and Engineering divisions. In furtherance of this plan, it is recommended that the purchasing and stores departments on each individual railroad forward copies of the reports to the heads of their respective using departments.

The report was prepared by C. K. Reasor (chairman), assistant manager of stores, Erie; C. D. Baldwin, purchasing agent, B. & A.; B. W. Griffith, general storekeeper, N. Y. C.; A. B. Lackey, division storekeeper, Sou.

Report on Material Handling

A report on material handling facilities was presented by A. S. McKelligon, Southern Pacific, which included illustrations of lumber pilers, barrel skids and improvised devices for handling mounted car wheels and treated lumber. The committee advocated that the handling and distribution of cross ties as well as switch ties should be the function of the stores department. It pointed out that warehouse trucks are causing a high percentage of injuries and recommended their replacement by improved equipment as rapidly as possible and also the application of pneumatic tires to hand trucks and wheel barrows.

Report on Railroad Made Materials

Most railroads are now using simple accounting methods for the manufacturing of materials in their shops. The usual method is for a store order to be issued on a printed form, with carbon copies for each department in the shops which work on the order. This form shows the cost by months for labor and material used in the manufacture of the items specified on the order.

The information for such charges is obtained from the daily time slips of the shopmen engaged on the work and from material tickets for material used and charged to the store order. When the order has been completed, the total of all charges is entered on the form and from this information the cost per unit is calculated and shown on the face of the store order. The material tickets are separated by store order numbers and are filed for ready reference. On some roads the detailed charges for material are entered on the back of the printed store order form.

To obtain a record of cost, a card system is used at points where manufacturing is performed on a large scale and where a record should be available for comparing costs on different orders for the same item and also for a comparison with prices obtained from outside manufacturers or jobbers.

A study of the items manufactured in shops of railroads represented on the committee indicated that no benefit would result from the publication of such a list and that it would be too lengthy. Manufacturing of material in railroad shops should receive thorough supervision and frequent analysis to insure that proper methods are followed and to prevent the manufacture of

material in larger quantities than provided by store orders, manufacture of material at one point without full knowledge of the quantity available at other points, manufacture of material at too many points, and manufacture of material which could be purchased at lower cost.

The report was prepared by B. T. Adams (chairman), district storekeeper, I. C.; R. W. Hall, division storekeeper, L. & N.; A. N. Laret, assistant to chief purchasing officer, St. L. S. F.; W. L. Oswalt, works storekeeper, Penn.; C. J. Vanderbosch, district storekeeper, B. & O.; L. P. Krampf (chairman ex-officio), supply agent, M. P.

Report on Public Relations

There was never a time when there was a greater need for giving the public intelligent and correct information on the subject of rail transportation than at present. The Association is doing a tremendous job through advertising, printed matter and speeches. There is abundant opportunity for the Division to share in this work and supplement what is also being done by the executives of the various individual railroads. The contacts of purchasing department and stores department officers and employees provide fertile ground for this work.

The committee, therefore, submits the following program by which each officer of this branch of railroad service may do his share, both directly and through employees, in promoting good will toward the railroad industry and getting the support of the public on what is needed in legislation:

Objective: To convince the public, particularly those contacted in daily operations, that we (a) believe in rail transportation as a necessary service in economic life; (b) are proud of the accomplishments in advancing the art; and (c) are alert to possibilities of service to the public as fast as these are developed.

Means to the Objective: (a) To convince the employee that what he does along these lines results in a personal return to him; and (b) to post the employee in clear, brief form on the facts he needs to carry out the objective.

Subjects: (a) Relation of railroads to the national economic picture in (1) employment, (2) wages, (3) purchases, and (4) taxes; (b) Effect of legislation (existing and proposed) dealing with any phase of railroad operation; (c) Accomplishments of the railroads in (1) improved equipment, (2) quicker and fuller service, (3) economies of operation, and (4) adoption of technical improvements; (d) Services available, with general knowledge of their cost to the user, and the advantages over competitive services; (e) How to receive complaints; and (f) Suggestions; manner in which they should be received and followed to a conclusion.

Methods: (a) Periodic meetings; (b) Advertising of the kind being carried on by the A. A. R.; and (c) Articles in magazines and newspapers, such as pamphlets and leaflets like those published by the A. A. R. and the Transportation Association of America, to be enclosed with mail.

Purchasing and Stores Employees: (a) Arrange for wider distribution of information now disseminated by the A. A. R., railroad publicity departments, and other sources so that all employees either receive copies or are given an opportunity to read them; and (b) Hold periodic meetings of the employees to hear speakers, such as representatives of the freight and passenger traffic departments and interested outsiders.

The report was prepared by A. C. Mann, vice-president, I. C.; L. P. Krampf, supply agent, M. P.; and E. J. Lamneck, purchasing agent, Penna.

Discussion

Responding to the Committee's recommendation that a speaker be invited to discuss the plans laid by the division to share in the problem of developing a more effective appreciation of railroads by the public, R. S. Henry, assistant to president, A. A. R., appeared before the division and both commended the Division's plan and developed in considerable detail the problem facing the railroads in stimulating effective interest by railway employees in the work to be done. Facts about other forms of transportation were presented to illustrate the justification of efforts to convince employees of the virtue of public relations work in the

interest of the railroads. He stated that the best advertising is still word of mouth advertising and that an employee can no longer be considered good who is not effective in public relations work as well as in the performance of his usual duties.

Report on Standardization

The committee, in 1938, submitted an analysis of specifications used on 40 railroads in purchasing rivet steel and rivets. This was referred to the Mechanical division. Information showing the sizes of copper ferrules and tubing on 35 railroads was referred to the Mechanical division and standard sizes have now been adopted by the Mechanical division, effective March 1, 1939, and simplified lists have been revised to conform to the Mechanical division standards and tabulated.

The Signal section of the Association has been collaborating in the simplification of electric lamps for signal purposes. A list of lamps is divided into five groups according to the relative sales activity, as reported by the manufacturers. The lists were circulated among 27 railroads, and the number of railroads using the various sizes was shown. The committee found that descriptions of lamps are often incomplete so that it is impossible to identify them definitely with any of the descriptions furnished by the manufacturers. An official list should be issued showing lamps that may be purchased and indicating the lamps which should eventually be discontinued.

Information compiled by the committee, enumerating the designs of rolled steel wheels for engine trucks in use on the various railroads, was referred to the Mechanical division for standardization. The report of the committee on locomotive construction for 1938 stated that there are 142 designs of engine truck wheels in use at present, with various diameters from 26 in. to 37 in.

The committee proposed as standard for use on new and existing locomotives, 6 designs of wheels in 30-in., 33-in. and 36-in. diameters. It proposed 4 other designs in 30-in., 33-in. and 36-in. diameters to meet the conditions on existing locomotives only, until such time as they shall be removed from service. The 10 designs will take care of approximately 93.5 per cent of the locomotives reported, either as the designs now stand or by slight modifications.

A digest of the specifications for bushes in use on the various railroads, together with a list of the sizes used, has been referred to the Mechanical division, and its specifications committee is progressing with a study.

700 Varieties of Tubing

Information reported by 45 railroads shows a total of 700 different sizes of mechanical steel tubing. These sizes are listed in this report. Outside diameters and wall thicknesses for sizes other than warehouse stock are marked. Intermediate sizes take the price of the next larger stock diameter or wall thickness or both, and longer delivery time is required. Some intermediate sizes also require a minimum order of 100 ft. Warehouse sizes listed by the dealers apply only to low carbon steel; tubing of higher carbon content is not stocked and takes an extra in price.

Information from 34 railroads indicates lack of uniformity in grouping the materials under a particular railroad specification. It also shows lack of uniformity of the requirements and of terminology. One railroad with separate specifications for bars includes five grades of steel under the specification, the principal difference being in the physical and chemical properties. Similarly another road includes six grades of steel bars under one specification.

Combining similar materials under one specification provides greater convenience of reference for both manufacturers and inspectors in seeing that materials conform to the specification, especially when the several grades ordered by the same railroad are in process of manufacture at the same time. An appreciable saving in cost of printing is also obtained. The differences in the grade requirements are principally in chemical and physical properties, which can be tabulated to occupy little more space than if only one grade were involved. Some railroad specifications differ in wording from the A. A. R. specification in some

respects, but the requirements would be interpreted to be the same as those of the A. A. R. specification.

Similar materials could be combined under a single A. A. R. specification to a greater extent than at present. A. A. R. specifications could be printed in pamphlet form convenient for use by manufacturers and inspectors; and many roads could use such pamphlets by inserting a sheet covering any special arrangements with the manufacturer, and stating that the materials are to conform to A. A. R. specifications except as otherwise noted. Since the A. A. R. specifications would be printed in large quantities, a considerable saving in the cost of printing would result. Any deviations from the standard specifications would be immediately apparent on the first page. It would, for this reason, promote greater adherence to A. A. R. specifications, which is necessary to secure the maximum economy and speedy delivery of material.

Bridge Reamers

Information received from 39 railroads, showing dimensions, shanks, number of roads using, etc., has been compiled. The items have been checked as to dimensions and shanks with 15 available manufacturers' catalogs, and dimensions or shanks not shown in any of the catalogs have been considered special and are indicated. All vendors catalogs state that reamers not listed carry a special price. It is, therefore, suggested that roads purchasing reamers to special dimensions check as to whether they are paying a premium.

The committee received a report on the advantages of a flat top oil carrier for distributing oil to users. The principal advantages given are that the flat top carrier may be stacked one on top of another and is simple in construction. A questionnaire was issued and replies were received from 35 roads. Eighteen favored this type as an alternate for the A. A. R. standard and 17 were unfavorable. Four roads use a similar can with satisfactory results and one road reported unsatisfactory results in pouring the liquids. The committee submitted a sketch of a flat top carrier, with the recommendation that it be included in the A. A. R. Sheet Metal Ware Standards as an alternate for Figure 13.

The report was prepared by A. G. Follette (chairman), general material supervisor, Penna.; J. H. Geary, classification inspector, Erie; W. M. Hinkey, supervisor of materials, B. & O.; J. L. Irish, assistant general storekeeper, U. P.; J. U. King, general storekeeper, A. C. L.; F. J. McGuinness, superintendent of stores, D. & H.; H. C. Ralls, supervisor of materials, M. P.; W. W. Williams, chief of requisition bureau, N. Y. C.; H. H. Wittekind, inspector of stores, S. P.; C. B. Tobey (chairman ex-officio), general storekeeper, L. V.

Discussion

The discussion was limited to statements by several railroads that the recommendations of the Committee were definitely being used in practice and the Committee was especially commended for the character of its work.

Report on Terminal Storekeeping

A survey covering the year 1938 was made of 24 terminal properties, to determine the practices followed in accumulating and clearing labor charges involved in handling material. Three charge all handling labor direct to operating accounts. The handling costs for 21 companies range from 4.29 to 16.27 per cent.

There are many differences in accounting practices that affect the handling cost. The general practice is to charge store delivery expense to the account benefited. Handling by using departments is charged to store expense with two exceptions. Switching is charged to store expense on 5 terminals, while on 16 it is not. Interstate Commerce Commission regulations for Class I roads require that switching of company material should be charged to transportation expense, except where the switching amounts to substantial periods each day, in which case the cost should be charged to material store expense.

Accounting by store forces is uniformly included in store ex-

pense. Where performed by the accounting department, only 6 terminals include the cost in store expense and 14 do not. Fourteen terminals apply the stores per cent to material used for shop orders and 4 do not. Prices used for second hand material issued range from scrap prices to 75 per cent of the price new. The store expense naturally is lower when second hand material bears a high price.

A majority of the terminals do not sort scrap. Very little preparing of scrap is being done to obtain higher prices. Lim-

Terminal Company	Charge Store Exp.	Disbursements	Store Percent	Is Shop Delivery Charged to Store Expense	Is Material Handling by other Dept. Charged to Store Expense	Is Switching for Store Charged to Store Expense	Is Material Accounting by Asst. Dept. Charged to Store Expense	Is Store Percent Applied to Material Used for Shop Orders	Price Used for S. H. Material
1	82286	84680	4.82	Yes	No	Yes	No	Yes	75%
2	66338	1,012,502	5.58	No	Yes	No	No	Yes	M. W.—40% Others—75%
3	3033	28638	10.58	No	Yes	No	No	Yes	Various
4	4568	47975	9.22	No	Yes	No	No	Yes	80% to 75%
5	62707	493076	12.21	Part	Yes	No	No	Yes	Scrap
6	7862	136035	5.56	No	Yes	No	No	Yes	25%
7	46055	55196	12.11	Yes	Yes	Yes	No	Yes	50%
8	33111	370798	9.95	No	Yes	No	No	Yes	50% and 75%
11	10899	138128	7.83	No	Yes	No	No	Yes	50% to 75%
12	30099	83914	6.17	No	Yes	No	Yes	Yes	40%
13	30096	318120	8.44	Yes	Yes	Yes	Yes	Yes	50%
15	3417	36040	10.03	No	Yes	No	No	Yes	50%
18	71596	1,869,327	4.29	No	Yes	No	No	Yes	Our Matl. 10% Other 50%
19	7889	70908	11.37	Yes	Yes	No	No	Yes	50%
20	18712	317368	4.59	Yes	No	No	No	Yes	50%
21	7439	14832	16.27	No	No	No	No	Yes	75%
22	20765	22286	4.92	Yes	Yes	Yes	No	Yes	50%
23	42948	475360	9.06	No	Yes	Yes	No	No	50%
25	23089	293777	7.80	No	Yes	No	No	Yes	50% and 60%
26	10017	114884	8.73	No	Yes	No	Yes	No	50%
27	14339	181258	8.91	Part	Yes	No	No	No	50%

An Analysis of Stores Expense on Terminal Railways

ited quantities may make cutting and shearing unprofitable in some instances, but studies of scrap market conditions indicate numerous opportunities for saving by preparing for higher priced classifications. One terminal sells its scrap to tenant lines and another makes sales to both tenant lines and dealers. All others sell direct to dealers. Prompt handling with tenant lines of all slow moving material should avoid accumulations of obsolete material. Regular and frequent checks of stocks are recommended.

Manufacturers carry parts for diesel power at various large cities and it is recommended that the terminal companies' stocks be reduced to a minimum by depending on the dealer for protective stock. This should also result in avoiding the purchase of many items which would eventually be scrapped because this type of equipment is still in the experimental stage and becomes obsolete rapidly.

The report was prepared by J. K. McCann (chairman), inspector of stores, C. B. & Q.; R. H. Bruckert, storekeeper, K. & I. Term.; A. F. Campbell, general storekeeper, Illinois Term.; F. A. Murphy, district storekeeper, B. & O.; H. A. Smith, purchasing agent, Term. of St. Louis; C. W. Yeamans, purchasing and supply agent, C. & W. I.; L. P. Krampf (chairman ex-officio) supply agent, M. P.

Report on Non-Revenue Tonnage

The committee has made an effort to determine the volume of company material handled in a normal year, from which the cost to the railroads of transporting that material by rail might be calculated. A close approximation of these costs can be determined by taking the non-revenue ton miles reported to the I. C. C. by the various railroads and applying a figure representing the "out of pocket" costs of transporting this material. Since these costs have an influence on operating expenses and have been found upon analyses to be large, the following comparison by districts of the non-revenue ton miles of company material in rail service is given. The costs to individual carriers may be calculated by applying to their own figures of non-revenue ton-miles the cost per ton-mile of haul which applies to their own road.

	Non-Revenue Ton Miles	Percent of Total Ton Miles
Eastern district.....	12,350,573,721	6.3
Southern district.....	4,962,875,046	10.1
Western district.....	16,658,564,743	11.1
All districts.....	33,972,013,510	8.6

No data are available for all Class I railroads showing the percentage of ton-miles of fuel in this study, but information is available from some individual carriers to indicate that somewhat more than 50 per cent is fuel. If the cost of transporting

fuel is eliminated, the remaining costs are still large enough to deserve serious consideration.

Reports from 26 of the larger railroads were tabulated and one railroad in each district making the most favorable showing was asked for its reasons for the results. The replies indicate that the most effective method of reducing the ton-miles of free haul of material is the development of a proper mental attitude toward free haul. It is essential that those responsible be made "free haul conscious" and fully realize that every mile a car moves loaded with company material means an out-of-pocket cost to the railroad.

The committee recommends extending the use of skids and pallets for the exchange of material between the store and foundries or for the shipping of material to the store from manufacturers where such an arrangement is practicable and economical. In one instance new brass is received at the store from the foundry on skids and the scrap is returned to the foundry on the same skids. One road uses skids for shipping driver brake shoes to the general store. The shoes are placed in the skids in predetermined units so that skids can be forwarded to outlying stores from the general store without rehandling of the brake shoes. This avoids returning the empty skids from the division store to the general store and facilitates handling brake shoes at the general store. Another road handles brass in the same manner. Pallets may be furnished to printing concerns and others, for the shipping of material purchased from them, or the dealer may agree to put cleats under the boxes for convenient handling by the store receiving the material.

The report was prepared by R. C. Harris (chairman), general storekeeper, Penna., E. A. Carlson, general storekeeper, P. M., Clyde Coker, purchasing agent, N. & W., F. P. Dugan, division storekeeper, I. C., A. M. Lemay, inspector of stores, C. M. St. P. & P., G. A. Goerner (chairman ex-officio), general storekeeper, C. B. & Q.

Report on Dining Car Supplies

The object of the purchasing and stores department is to purchase, store, distribute and exercise general supervision over all material and supplies on the railroad until it is used. This should apply to equipment and supplies used in dining cars, hotels and commissaries. The details between the purchasing and stores department and the department having direct charge of dining cars, hotels and commissaries must be governed by the requirements of the individual railroad, but general supervision should be exercised by the purchasing and stores department so that the dining car and commissary department uses the best practices in purchasing, handling, storage and distribution. It has been demonstrated on several railroads where these supplies are under the supervision of the purchasing and stores department that economy has resulted.

The committee has obtained information from 30 railroads of commissary stock on hand, including equipment and consumable items, as of December 31, 1938, and a summary has been sent to the railroads contributing. This tabulation is as accurate as present systems of accounting permit. Some railroads distribute from stocks on hand. Other railroads draw largely as needed from dealers' stocks and others have a number of sub-stores where supplies are carried for replenishing cars en route. Wide differences in this group are largely the result of different methods of accounting and charging out materials, also to the length of trips and density of traffic. It is the opinion of the committee that while there are some justifiable circumstances for some of the large balances, there is room for improvement in many cases, and it is recommended that each carrier compare its balance with those in the statement and determine whether any change in practice is advisable.

The report was prepared by L. V. Hyatt (chairman), commissary purchasing officer, M. P.; W. Dolphin, superintendent sleeping and dining cars, C. M., St. P. & P.; W. J. Farrell, secretary; A. F. Free, disbursement accounts assistant, accounting division, A. A. R.; E. L. Fries, general purchasing agent, U. P.; P. L. Grammer, assistant purchasing agent, Penns.; J. F. McAlpine, assistant purchasing agent, C., B. & Q.; T. K. Russell, assistant to dining service superintendent, I. C.; E. A.

Clifford (chairman ex-officio), general purchasing agent, C. & N. W.

Report on Surplus Materials

There are two sources of supply for surplus or used material; the second-hand dealer who buys regularly and has a stock on hand, and other railroads. Available items in the hands of the second-hand dealer and of the railroads, which will not generally prove attractive to other railroads as users, will be such items as are constantly being produced by a large number of railroads in car dismantling programs. Such lists, most of them voluminous, have been exchanged, and the committee finds practically no sales made between Class I railroads or between Class I and short line railroads, and recommends the discontinuance of the mailing of such car-dismantling lists between Class I railroads. The committee further recommends that railroads requiring such car repair items should inquire of railroads in the particular region.

Information from 18 railroads indicates conclusively that certain materials are being sold between some Class I railroads, and between Class I and short line railroads. Such materials should be advertised. It is further recommended that such lists should only be distributed in the natural zone of purchase and sale, and not where freight, express or delivery charges would be excessive. Each railroad should give the standard material classification reference, the regular requisition or order description of the item, and an accurate description.

The General Committee referred to the committee the 1933 report of the Committee on Elimination of Preventable Waste, Presidents' Traffic Conference, Eastern Territory, which recommended rules for the sale of surplus and second-hand materials. The committee has no change to be made in these rulings.

The report was prepared by M. E. Towner (chairman), general purchasing agent, W. M.; G. O. Beale, chief purchasing and stores officer, C. & O.; U. K. Hall, general storekeeper, U. P.; W. B. Hall, purchasing agent, D. & R. G. W.; A. W. Munster, vice president, B & M.; G. H. Walder, purchasing agent, C., M., St. P. & P.; E. M. Willis, purchasing agent, N. P.; C. C. Warne (chairman ex-officio), purchasing agent, N. Y. C.

Discussion

The Southern Pacific reported poor results in selling surplus and obsolete materials to other roads and took the position that the practice of exchanging lists among railroads should be discontinued. Other roads in the East and Central West, including the Illinois Central, reported satisfactory results especially with special items and the report was accepted as read.

Report on Guarantees

Railroads have different methods of maintaining records for material guarantees. The development and maintenance of records, which will keep the store department and all using departments advised, is a problem dependent upon special conditions. On one railroad the procedure is covered by a circular. Aside from commodities on which this company has a specific written understanding with the manufacturer covering the expectancy of service life, there is also an implied understanding with practically all sources from whom it purchases material that there is a definite responsibility to adjust to the satisfaction of the railroad company all material of inferior workmanship and inherent defects. In instances where a manufacturer makes a specific period or performance guarantee, stating the expectancy of service life of his product, his responsibility is on the following basis:

(1) Replacement in kind when the guaranteed service life has not been obtained; (2) Pro-rate the replacement expense, based on the per cent of actual service life, as compared to the total specified in guarantee. There is also an implied obligation to adjust by refund, or replacement, materials which fail in fair service due to inherent defects or poor workmanship,

without recourse to a specific guarantee covering each transaction.

Guarantees—Expressed or Implied

Following is a summary of the items on which some railroads have a more or less definite understanding with manufacturers covering adjustments. There is, to a certain extent, a responsibility on the part of the manufacturer covering all items which are purchased wherein material of inferior workmanship or inherent defects is furnished:

Batteries; Car Lighting—7 years on pro rate basis.

Stabilizers; Truck—7 years for efficient and satisfactory service. Will replace free of charge any parts breaking or becoming inoperative.

Wheels; Rolled Steel—Implied guarantee for life of wheel against defects in manufacture.

Wheels; Cast Iron—5 years—70 ton; 7 years—30, 40, 50 ton. Guarantee on deficiency basis pro rated on service.

Castings; Steel (Except Side Frames and Bolsters).

Castings; Steel (Except Side Frames and Bolsters)—Railroad Specifications provide that castings showing defects subsequent to acceptance at manufacturer's plant will be rejected.

Castings; Malleable—Railroad specifications provide that castings showing defects subsequent to acceptance at manufacturer's plant will be rejected.

Gears; Draft—All manufacturers guarantee for one year to replace accounts of manufacturer's defects.

Bearings; Roller—For Locomotive and Tenders—Replacement on percentage credit based on mileage run.

Bearings; Roller—Passenger Cars—Replacement on percentage credit based on length of time in service.

The type of guarantee is generally dependent upon the material purchased and the conditions in which it is to be used. To convey some idea of the types of guarantees in effect by the larger manufacturers, the committee quoted several forms of contracts.

The National Association of Purchasing Agents' reference manual of typical clauses for purchase contracts clearly defines the procedure covering guarantees, quality, performance and patent protection.

The type and character of guarantee is, to a great extent, dependent upon the conditions surrounding the individual purchase, and purchasers should confer with their law department as to the type and character of clauses covering the particular transaction.

The report was prepared by G. H. Walder (chairman), purchasing agent, C., M., St. P. & P.; J. R. Watt, general purchasing agent, L. & N.; M. E. Towner, general purchasing agent, W. M.

Report on Purchase Order Forms

The requisition-order method is designed to eliminate the writing of purchase orders from a previously typed requisition. It was originally presented in 1927, and has been the subject of discussion, analysis and development in subsequent years. Operations in the storekeeper's office that can be eliminated are the cross-referencing and inserting of the firm name, order number and date on the requisition, and checking items on orders against items on requisitions for errors. Operations in the purchasing office that can be eliminated are the writing of the order from the requisition; checking items on orders against items on requisitions; errors in quantity and description that may occur in re-writing; elimination of requisition file; loss of time in placement of order on vendor; requisition forms, carbon paper and binders; and the reduction in typewriter equipment, desks, chairs, etc.

The reasons presented for not adopting the method have been based on difference in mileage, local conditions, and consequent variations in organization and procedure. The specific objections which have been brought to the committee's attention in the past have been met by further developments, particularly in recent years. For instance, the insufficiency of copies at the time of the initial writing has been overcome through improved duplicating methods. Although the stores department may be required to write more requisitions in order to include only related items on the same requisition, experience of users has shown that

additional work from this cause is relatively small and is largely offset by the advantage of not having to check the purchase order against the requisition.

The repeated ordering of small items is one of the phases of purchasing most productive of office detail. The release order is particularly adapted to the handling of this type of purchasing, and is supplemental to the requisition-order method.

The telegraphic code has been presented in the past as a means of economy in the transmission of telegrams. One road now uses teletype between general offices and off-line traffic agencies in principal cities to facilitate and reduce off-line expense.

The report was prepared by J. H. James (chairman), purchasing agent, P. & L. E.; C. S. Douglass, assistant to purchasing agent, N. & W.; F. E. Driscoll, purchasing agent, Erie; J. S. Fair, Jr., assistant to purchasing agent, Penna.; A. B. Kast, assistant to general purchasing agent, L. & N.; H. P. Millar, chief clerk to general purchasing agent, C. P. R.; M. C. Nystrom, assistant purchasing agent, S. P.; C. R. Painter, purchasing agent, N. Y. N. H. & H.; H. M. Rainie, purchasing agent, B. & M.; A. A. Taylor, assistant general purchasing agent, M. P.; E. G. Walker (chairman ex-officio), assistant general purchasing agent, A. T. & S. F.

Report on Storage Facilities

Adequate storage facilities for the protection of supplies are essential to the economical operation of a supply department. Expenditures for storage facilities, however, should be justified by the savings in the handling, care and distribution of the material stored. Material can perish from deterioration or be stolen at small points as well as the main stores. Proper facilities should be provided for the protection of these supplies. A small store, with standard shelving and platforms for outside material and located adjacent to where the material is used, is considered a model set-up.

Where the oilhouse is not adjacent to the storeroom and the oilhouse attendant is required to issue supplies when the storehouse is closed, a small supply of items should be placed in the oil room.

Non-Ferrous Metals

All non-ferrous metals should be protected from theft by lock. Around car yards and inspection points, locked boxes of the proper capacity should be provided. In shops and roundhouses locked containers should be adjacent to the work. These containers should conform to the size and shape required for the handling equipment available and should be emptied or removed to the central storage daily.

Lumber Storage

When renewing old bearings or constructing new ones for lumber, concrete foundation pedestals and old rail are recommended. A bearing of this construction lasts almost indefinitely, and can be moved from place to place, if desired. The bearings can be spaced to meet requirements. Lumber under 2 in. in thickness should have a bearing at least every 4 ft. 4 in. of its length, or less. Two-inch to six-inch lumber should have bearings not more than 8 ft. 6 in. apart. Lumber over six inches thick may safely have bearings spaced 12 ft. or 13 ft. apart. The general elevation of the bearings will vary according to the character of the lumber to be piled upon them. Bearings for lumber up to 24 ft. should have a pitch of not less than $\frac{1}{2}$ in. for each foot.

In piling, lumber should be separated as to grades, sizes and lengths. Strips should be placed between each layer over the bearing and air space left between each piece. The ends of the first course of lumber should be brought flush over the center of the front bearing. Each succeeding course should project not less than $\frac{1}{8}$ in. All piles of one-inch boards, dressed car flooring and two-inch plank should be protected from the sun and rain by a covering of rough boards laid in two courses, with the cracks in the lower course lapped by the boards of the upper course. This should be laid upon strips so that it will

be about 6 in. above the top of the pile at the front end and 2 in. at the rear.

All hardwood should have the ends painted with a good grade of oil paint to prevent checking. A large percentage of the dust accumulating on shelves and material inside storerooms comes from the floors. Dust is harmful to materials and supplies, also the health of employees. This condition can be eliminated by painting the floors and using trucks with rubber tires.

The report was prepared by L. F. Duvall (chairman) assistant general storekeeper, A. C. L.; G. W. Alexander, general storekeeper, C. of G.; J. J. McKinnon, storekeeper, B. & M.; F. W. Reynolds, district storekeeper, B. & O.; L. C. Thomas, manager of stores, C. N.; C. B. Tobey (chairman ex-officio) general storekeeper, L. V.

Report on Motor Vehicles

The committee learned that one of the western railroads that is operating bus and truck lines has been able to arrange with a local dealer at the main division point to carry stocks of repair parts for motor equipment. This railroad, operating between Chicago and California, arranged with a local dealer to carry a stock of standard repair parts, which were sold to the company at the same price it would have been required to pay the manufacturer, thus permitting the transportation company to operate on a decidedly smaller stock of material on hand with no increase in the cost of the material.

In some states, notably Pennsylvania, where the tax on liquid fuel is not recoverable for fuel used on other than highway vehicles, the law allows a 2 per cent discount on the liquid fuel tax to distributors. Thus, a road using 2,000,000 gal. of gasoline a year could save \$1,600 in the gasoline tax by being a distributor, plus such handling and storage losses of liquid fuel as can be substantiated.

The report was prepared by R. D. Long (chairman), purchasing agent, C. B. & Q.; E. S. Jamieson, assistant general purchasing agent, U. P.; C. E. Smith (chairman ex-officio), vice-president, N. Y. N. H. & H.; J. H. Lauderdale, general purchasing agent, M. P.; C. L. McIlvaine, assistant purchasing agent, Penn.

Report on Supply Trains

A cost study was made by the committee involving railroads that have discontinued the use of supply trains and railroads that have continued this service. Inquiries were submitted to 50 railroads. Of these 8 operate supply trains, 32 use other methods, and 8 discontinued their operation for various reasons.

The committee endeavored to determine the comparative cost per \$1,000 issued of supply trains, as compared with supply cars, line cars and other methods. Only a few railroads supplied any cost data for delivering material to the line of road by these methods, and the committee found it impossible to compare the various methods. The cost of supply train operation per \$1,000 of material issued, as reported by five railroads was: Road A \$51.81; Road B \$84.34; Road C \$38.57; Road D \$34.84; Road E \$67.16; the costs included the cost of train and engine, other train service costs, fuel and way, enginehouse supplies, stores department labor, and food.

Replies received from railroads still operating supply trains indicated advantages such as picking up scrap with magnet crane, exchange of tools, reduction in requisitions, policing of materials on line of road; and inspection of toolhouses, stations and towers by division and other officers. It is the opinion of the committee that certain railroads have conditions which permit operating supply trains advantageously and economically. On other railroads it would be physically impossible, from an operating or traffic standpoint, to operate supply trains at any cost.

Distribution of Gasoline

Methods used for the distribution of gasoline or lamp oil to line of road include delivery directly from the tank car to underground storage tanks, by dealers in tank wagons, by deal-

ers in drums for shipment to line of road, directly from tank cars to line of road in way freight, and drum shipments from a general or division store filled from tank cars and shipped to line of road with line cars, supply cars and way freight. Where gasoline cannot be delivered to line points by supply train or directly from tank cars, in connection with line or supply cars, to the point of use, it is recommended that consideration be given to its delivery by railroad or privately owned tank wagons.

The general stock of maintenance of way and construction materials for distribution to line of road for current use should be centralized at the general store, except cross and switch ties and bridge timber for treatment which should be stored at the treating plant for distribution from that point to line of road. The committee recommends the establishment of a storehouse and organization in the immediate vicinity of construction projects, for large quantities of material so that material can be shipped directly to the project and eliminate handling costs at local or general storehouses.

The report was prepared by J. L. Quarles, (chairman), general storekeeper, C. & O.; J. A. Allen, storekeeper, C. B. & Q.; C. B. Chapman, traveling stores inspector, Sou.; J. W. Gorsuch, reporting storekeeper, Penna.; Frank McGrath, traveling storekeeper, B. & M.; J. W. Watkins, assistant to general storekeeper, L. V.; and O. A. Donagan (chairman ex-officio), general storekeeper, B. & M.

Report on Branding

The committee investigated the practices generally in effect at present on 20 Class I railroads, aggregating 118,130 miles and from the reports received, prepared a list of items which should be identified by markings. Whether the manufacturers should place the identifying mark on the materials or whether it is to be applied to the railroads themselves is optional. Generally, the markings are applied by the manufacturers, and this should be continued and extended. All metals should be stamped or etched and wood items should be branded. Glassware, such as lantern globes, etc., should be embossed. Items which are not purchased with interwoven monograms, such as towels, linens, blankets, cushions, etc., should be stenciled. The designation to be used to indicate the railroad's ownership and the location of such marking should be determined by the law department.

The present practice followed by many individual carriers and recommended by this division is that, where practicable, the old article should be exchanged for the new one to be issued. In cases where the old article is not available, the chief local officer should sign the order for the material disbursed. This practice should be followed to the greatest extent possible.

The report was presented by J. T. Kelly, chairman, general storekeeper, C. M. St. P. & P.; J. H. Geary, classification inspector, Erie; and F. J. McGuinness, superintendent of stores, D. & H.

Report on Standard Packages

The two principal air brake equipment manufacturers have, without particular solicitation, compiled packaging schedules for their products, using cartons and pasteboard boxes, and have distributed them to railroads. To some extent, however, the package quantities are too large for distribution without breaking bulk. The several injector and lubricator manufacturing companies have shown particular interest in packaging materials along the general lines advocated. These companies will eventually be in position to issue lists or catalogs showing standard package contents for their products.

Stoker manufacturing companies have been approached regarding material which lends itself to standard packaging, and are now making a study of the subject. Booster material does not generally lend itself readily to standard packaging. Some of the items are now standard packaged and further study is being made. Fire door companies have been contacted in the interest of standard packaging, and have agreed to package items that lend themselves to this arrangement. Feed water heater manufacturers have been contacted and it developed that there

were comparatively few items of this equipment which would yield readily to standard packaging. One company submitted a list of 18 items which it agreed to standard package. Another company packs small materials in cardboard boxes, with the part number on each box, together with the number of pieces to the box or carton.

The committee has contacted five sander companies. Interest has been displayed by two of the companies. The committee has contacted three bell ringer companies and interest has been displayed by one company. It developed that so small a percentage of reverse gear parts lend themselves to standard packaging that further action by the committee was deferred.

One of the electric headlight companies has cooperated with the committee wholeheartedly by preparing a standard packaging list of its materials. A new catalog has been completed recently and distributed to the railroads. Another company is now preparing a new catalog and price list which will show standard package contents, and expects soon to have it ready for distribution to railroads.

One locomotive and car wiring fixture company is making further studies of the packaging of the various items now shown in its general catalog. This entails much detail work. As studies are completed on each subject, pamphlets will be prepared showing the standard packaging arrangements, all of which will be distributed in loose-leaf form so that upon completion they may be assembled into one complete catalog.

There is little uniformity in present methods of packing railroad pipe fittings. Several contacts with standard packaging in view have recently been made with manufacturers and the latter have indicated a willingness to cooperate. This is a group of materials wherein standard packaging would be of particular value and it is felt that further efforts will bring about profitable results.

The report was prepared by J. L. Brown, (chairman), purchasing agent, S. A. L.; F. S. Austin, assistant purchasing agent, N. Y. C.; John Carmichael, superintendent of stores, W. Md.; J. T. Kelly, general storekeeper, C. M. St. P. & P.; L. L. King, purchasing agent, I. C.; I. H. Lance, general storekeeper, D. L. & W.; T. E. Sullivan, electrical storekeeper, C. & N. W.; C. E. Swanson, traveling storekeeper, C. B. & Q.; C. L. Wake-man, general storekeeper, Wab.; C. H. Murrin, (chairman ex-officio), general storekeeper, L. & N.

Report on Price Extras

The application of quantity differentials merits the earnest attention of every railroad employee ordering and using materials and supplies and storekeepers and others originating requisitions should be made aware of the possible savings. When requisitions or orders are in preparation the quantity should be compared with the differential, as in some instances an increase in the quantity may earn a differential sufficient to pay or nearly pay for the extra quantity. Savings may also be made by ordering in carload lots.

The financial condition of the railroad and the usefulness of the article should be considered at all times. It will be unwise

ries a quantity differential and that in many cases different locations have different extras. This may be due to the practice

Malleable Iron Castings

Decreases in Price per Pound When Ordered in Quantities as Shown

Weight per Piece—Lbs.		Number of Pieces									
		1 to 3	4 to 9	10 to 24	25 to 49	50 to 99	100 to 249	250 to 499	500 to 999	1000 to 1999	2000 and Over
.25 lbs. and under	Base	.044	.080	.104	.116	.152	.188	.212	.230	.248	
.25 to 1 lb.		.044	.080	.092	.116	.152	.194	.212	.218	.230	
1 " 2 lbs.		.015	.025	.040	.058	.100	.132	.148	.155	.160	
2 " 4 "		.030	.050	.078	.088	.117	.139	.160	.170		
4 " 8 "		.006	.030	.063	.080	.095	.107	.115	.12	.125	
8 " 15 "		.010	.034	.065	.076	.088	.094	.111	.111	.111	
15 " 25 "		.010	.028	.047	.058	.070	.076	.083	.083	.083	
25 " 50 "		.006	.016	.035	.049	.053	.057	.061	.061	.061	
50 " 80 "		.003	.014	.025	.032	.035	.038	.041	.041	.041	
80 " 100 "		.002	.014	.025	.031	.034	.037	.040	.040	.041	
100 lbs.		.005	.013	.018	.024	.027	.031	.033	.033	.030	

of some railroads buying through merchants or jobbers, while others buy direct from the mill or manufacturer. There are so many instances of this kind that it is not practicable to list all of them. The purchasing department of each railroad has a responsibility in determining the policy as to increasing quantities

Summary of Price Extras

Kind of Material	Price Unit	Effect of Special Quantities on Basic Prices
Parts for switch stands	ea.	\$.05-\$.51
Track bolts	cwt.	\$.10-\$.50
Track spikes	cwt.	\$.10-\$.50
Tie plates	ea.	\$.02
Spring washers	ea.	10%
Fencing	rod	\$.0135-\$.0675
Switch wrenches	ea.	\$.25-\$.50
Underground cable	ft.	19%-34%
Bond wire, galvanized	lb.	\$.15-\$.55
Dry batteries	ea.	10%
Insulated rail joints	ea.	\$1.15-\$.2.97
Pole line hardware	ea.	16%
Dynamite	cwt.	\$0.75-\$.3.75
Blasting caps	1,000 pcs.	\$1.00-\$.2.00
Rivets, 1/2 in. and over	cwt.	\$0.20-\$.4.00
Washers	cwt.	\$0.25-\$.0.35
Bolts, nuts and log screws	package	10%
Bolts, nuts and log screws	carload	5%
Studs, cylinder head		8.5%-60%
Superheater bolts	ea.	\$.025-\$.11
Coil springs, standard	cwt.	\$0.15-\$.0.40
Coil springs, special	cwt.	\$0.25-\$.15.00
Elliptic springs	cwt.	\$2.00
Boiler tubes and safe ends		5%-50%
Copper ferrules	lb.	\$0.10-\$.0.45
Copper rods	lb.	\$0.05-\$.0.20
Copper sheet	lb.	\$0.005-\$.0.20
Tubing, cold drawn steel		1.5%-150.0%
Spark arrester netting	sq. ft.	\$.01-\$.0.55
Steel bars	cwt.	\$.25-\$.50
Steel sheet	cwt.	\$.25-\$.1.00
Cold finished steel bars	cwt.	\$.10-\$.3.00
Iron, refined bars	cwt.	\$.20-\$.50
Wire staples, galvanized	cwt.	\$.10-\$.50
Wire cloth, copper	sq. ft.	20%-55%
Tool steel, high speed	lb.	\$.005-\$.15
Shim steel	cwt.	\$.25-\$.5.25
Steel plate	cwt.	\$.10-\$.1.25
Car and locomotive castings	lb.	\$.001-\$.0.30
Brake shoe keys	cwt.	\$.50-\$.2.00
Malleable castings	lb.	\$.044-\$.2.48
Flashlight batteries	packages	10%
Carbon brushes		10%-53%
Electric cable		28%-15%
Headlight cable		2%-91%
Electrical fittings		8%-23%
Arc lamp globes		15%-25%
Glass insulators		33%
Electric lamps	list price	36%-26%
Electric plugs	list price	38%-18%
Electric switches		40%-20%
Insulating tape		35%-18%
Copper wire, insulated	1,000 ft.	\$1.87-\$.14.35
Fire clay	ton	\$16-\$.44.00
Fire brick		11%-31%
Fuses		24%-38%
Drinking cups		4%-25%
Steel pipe	l.c.l.	27%
Nails	keg	\$.20-\$.65
Riveted keys		5%
Bits		25%-150%
Belt lacing		10%
Manilla rope	lb.	\$.01
Case hardening compound	n.t.	\$10.00-\$.54.00
Potash	lb.	\$.02-\$.10
Sal-Ammoniac		15%-50%
White lead	cwt.	\$1.00-\$.1.75
Quenching oil	gal.	\$.07
Oxalic acid	lb.	\$.05
Carbide		12%
Aluminum powder	lb.	\$.03-\$.07
Red lead in oil		\$.20

RIVETS—STEEL, 1/2 IN. DIAM. AND LARGER:*

	Increase
1,000 lb. or more of an item	Base
*600 lb. to 999 lb. of an item	\$.20 per 100-lb.
*400 lb. to 599 lb. of an item	.35 per 100-lb.
*200 lb. to 399 lb. of an item	.70 per 100-lb.
100 lb. to 199 lb. of an item	1.50 per 100-lb.
50 lb. to 99 lb. of an item	3.00 per 100-lb.
Less than 50 lbs. of an item	4.00 per 100-lb.

*These extras do not apply on the following stock sizes of Button and Cone Head Rivets.

BOILER TUBES AND SAFE ENDS:*

	Increase
40,000 lb.	Base
25,000 lb. to 39,999 lb.	5%
12,000 " to 24,999 "	12 1/2%
6,000 " to 11,999 "	25%
2,000 " to 5,999 "	35%
Under 2,000 "	50%

to increase the quantity if the material will not be required for a long time, or if its ultimate use is doubtful. Investigation discloses that practically everything manufactured and sold car-

ordered to avoid "extras," and also the careful checking of purchases to avoid the payment of such "extras."

The committee prepared a list of standard quantity "extras" and recommended that copies be placed in the hands of general storekeepers, division storekeepers, and others originating requisitions, and that a suitable record be made in the stock book or on the stock card. The list was prepared in a separate bulletin for distribution and embraced over 200 items of material. Since lack of space prohibits the publication of the details herein, a few tables are reproduced as examples and the remaining tables are summarized.

The report was prepared by O. L. Browne, chairman, assistant to purchasing agent, A. C. L.; L. J. Ahlering, purchasing and stores agent, C. & E. I.; W. A. Clem, purchasing agent, Reading; F. I. Foley, general storekeeper, N. Y. N. H. & H.; J. W. Hagerty, office manager, purchasing department, Penna.; T. A. Hodges, general storekeeper, S. A. L.; C. C. Hubbell, general purchasing agent, D. L. & W.; E. A. Jones, purchasing agent, L. V.; and E. J. Lamneck, chairman ex-officio, purchasing agent, Penna.

Report on Stock Books

A survey has disclosed the use made of stock records, other than the present A. A. R. record, with the detachable coupons, for reporting materials on hand, etc. to the general storekeeper's office. A number of the railroads surveyed are using a single item record. Some use it only at their divisional and local stores, while others use it at all stores. There appears to be a general trend toward a single item record with no coupons for reporting materials on hand, etc. to the general storekeeper's office. In some cases it supplants the present A. A. R. stock record, while in others it merely supplements it. Inquiry brings out various explanations, but the two most frequently given are that the consolidation of stocks makes the use of a master book unnecessary, and the desire to have a more flexible and less expensive record.

The committee is agreed that consideration should be given to a single item stock record to serve as a supplementary record on those roads which require two different stock records, and to supplant the present A. A. R. stock record, with its coupons for reporting materials on hand, etc., on those roads that consider a change desirable.

The single item stock record provides a self-indexing record, and thus avoids loss of time in searching for items out of place. It permits the elimination of inactive items. It permits the maintenance of a record that will furnish a concise and complete history of each item over a period of years. It eliminates the necessity for transferring data annually to new sheets. It saves time in checking stock, writing requisitions, and locating items. It is adaptable for use in general, divisional, and local stores. It permits arithmetical work to appear in horizontal columns. It permits stock records to be transferred when materials are transferred from one location to another.

The report was prepared by V. N. Dawson (chairman), assistant general storekeeper, B. & O.; R. G. Benson, classifications inspector, Erie; H. J. Blum, assistant general storekeeper, M-K-T; U. S. Cornelius, traveling storekeeper, Southern; W. H. Lloyd, stores inspector, C. R. I. & P.; S. Sneddon, general storekeeper, C. N. R.; Grover Wonnell, storekeeper, Penna.; G. A. Goerner (chairman ex-officio), general storekeeper, C., B. & Q.

Report on Obsolete Material

A special form should be adopted for reporting and disposing of obsolete materials on hand, to permit of a systematic record of obsolete materials, to give all departments a permanent record of material scrapped, and to prevent the scrapping or disposition of material unless reported and authorized. The procedure of handling obsolete material may vary according to the requirements of the individual railroad, but the following has proved practical on a Class I railroad for several years:

Storekeepers, after determining that material has reached obsolescence and cannot be used by substitution or re-manufacture, prepare a form in six parts. All copies are approved by the storekeeper and officer in charge of the using department at the local point. The storekeeper retains one copy, and forwards the original

and four copies to the general storekeeper, who after determining that the material cannot be disposed of for greater than scrap value, forwards the original and three copies to the chief officer of the using department for approval, requesting the return of the original and two copies. After obtaining approval of the chief officer of the using department, the general storekeeper forwards the original and one copy to the comptroller for authority to charge off the value of the material to proper expense. When the comptroller authorizes the general storekeeper to scrap the material, the auditor of disbursements receives from the comptroller one approved copy of the form which, in turn, is sent to the general stores accountant for handling the values through the expense account. The general storekeeper then notifies the storekeeper to scrap the material shown on the approved form. All stock records are marked when the forms are prepared and, in addition, they show the month in which the material is actually scrapped.

A special form should be used for reporting special material which has not been used for the specified purpose within a reasonable period of time. A proposed form has been submitted, together with a special material tag for attaching to the material in question, showing a complete record of the order number, invoice date, cost, etc. This tag, together with the form, constitutes a file which can be kept active until the material is finally used or other disposition made. Each report is given a number and the material is also marked so that the special material tag will agree with the file.

A record should be kept of stock balances by material classes, showing the increase or decrease each month in the individual classes. This gives a figure for comparison with the inventory balance of the last inventory, and furnishes a complete record of stock balance and disbursements for each class of material by month.

Furnishing material costs to the employees in the using departments is an important function of the stores department.

The report was prepared by E. W. Peterson (chairman), general storekeeper, B. & Aroos; F. J. McNulty, chief clerk to vice-president, B. & M.; W. H. Morris, general storekeeper, Read; C. L. Nash, general storekeeper, Fruit Growers; E. G. Roberts, general storekeeper, C., R. I. & P.; E. W. Walther (chairman ex-officio) general storekeeper, B. & O.

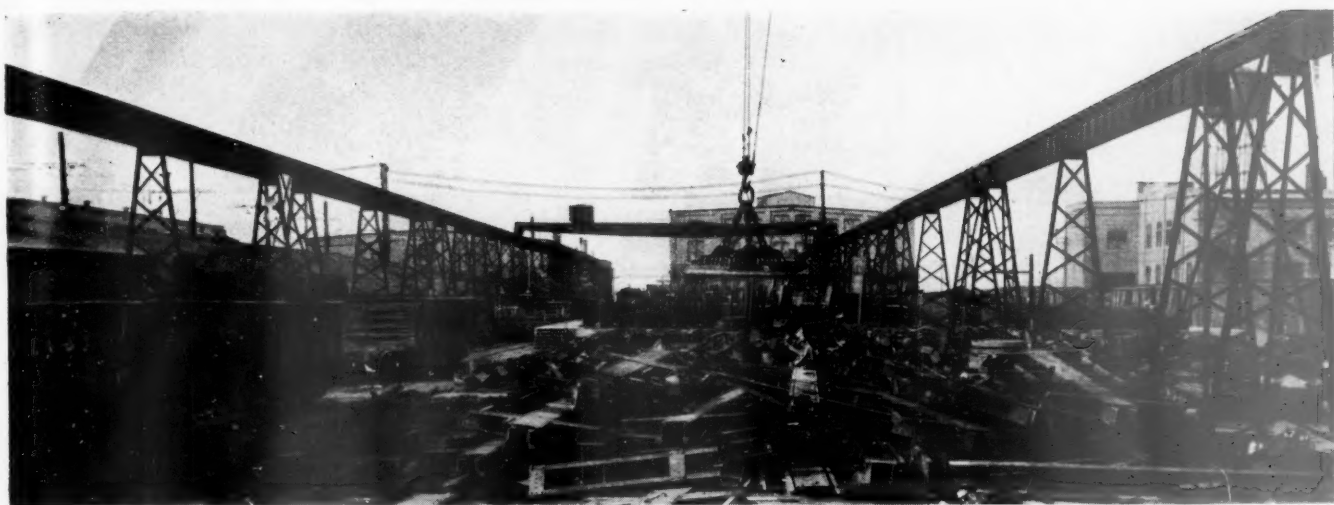
Other Business

A. W. Munster, vice-president, Boston & Maine, and past chairman of the division, presented a special paper on the success and value of group meetings of purchasing and stores department employees which have been held periodically under the direction of the division in



Union Pacific Supply Officers in Costume for the Motion Picture "Union Pacific" Reminiscent of the Building of the Railroad in 1869

From Left to Right: H. W. Lister, commissary buyer; G. T. Wickstrom, assistant general purchasing agent; E. L. Fries, general purchasing agent; U. K. Hall, general storekeeper; L. T. Hoffman, chief clerk; E. S. Jamieson, assistant general purchasing agent



In the Scrap Handling Yard of the Rock Island at Silvis, Ill.

different parts of the country. He indicated that the stores group meetings have been more successful than the purchasing meetings and stated that the value of such meetings can be increased by holding annual meetings of group chairmen to formulate programs and by assuring that designated employees of standing committees of the division attend the group meetings with definite information and questions. He stated that many get more out of the regional meetings than annual conventions, because the smaller attendance encourages a freer exchange of ideas and experience, also that group meetings give opportunities for younger employees and that acquaintanceship and understanding are augmented.

The election of officers and members of the General Committee for the coming year was held too late to be reported in this issue and will be published in next week's issue. There was no doubt, however, that A. C. Mann, vice-president, Illinois Central, would be elected chairman of the division.

Air-Conditioning for Perishable Produce

(Continued from page 1032)

should be used is determined by the commodity to be handled and the geographical location of the plant. The insulated space should be equipped with properly insulated doors and, if circumstances make them desirable, ante-rooms should also be provided.

After the type of the structure has been determined, care should be exercised in selecting the mechanical equipment. A compressor of adequate size, determined by calculations based on the best engineering practice and the conditions under which the compressor is to operate, should be selected. If the plant is to be controlled automatically with comparatively little attention, the compressor should operate at a slow speed. This will require a larger unit than would be needed if a high-speed machine were selected, but, owing to the fact that the former machine will be of more sturdy construction, it will be more reliable. The selection of the type of refrigerant to be used is also dependent on local conditions. If the refrigerating room is so located that adequate exits can be provided, and if the commodity being handled will permit, there is no objection to the

use of a toxic refrigerant. However, if the exits are limited, it is advisable to use a non-toxic refrigerant.

The compressor should be installed in a location adjacent to the space to be refrigerated. It is assumed that the refrigerating plant to be provided is of such a size that it is necessary to utilize water for cooling. In locations where the cost of water is comparatively low and the supply plentiful, it is recommended that the water be disposed of after it has served its purpose if this can be done without inconvenience. However, if conditions favorable to this method of handling the water do not exist, it is recommended that a cooling tower of adequate capacity be used.

Other Considerations

If the conditioning equipment is used during the entire year and the geographical location of the plant requires that it be heated during the winter, this feature should be given consideration. The refrigerating machine should be equipped with the necessary apparatus to insure that it will operate economically and efficiently; that is, it should be provided with apparatus that will protect it from damage due to various conditions that arise. The nature of the cooling units in the refrigerating room should also be determined by the commodity to be handled. Some commodities require the use of coils, while others will permit the use of unit coolers. Equipment of the latter type is coming into more general use owing to the fact that since the cooled air is circulated throughout the room by means of an electrically-driven fan instead of by gravity as when coils are used, the cooling surface required is less. Unit coolers also lend themselves more readily to automatic operation.

If the commodity to be handled requires humidification, provision must be made for accomplishing this by methods best suited to the local conditions. Humidification can be provided by either steam jets or water sprays. In large installations, both methods should be provided. Steam, when available, can be used during the heating season; if steam is not available, water will be required. If heating is required for the treatment of fruits and vegetables, heat should be introduced into the storage rooms by the best means available.

The successful treatment of fruits and vegetables depends upon the application of certain principles that have been developed either scientifically or by experiment. If feasible, the use of automatic control apparatus can be used to eliminate guess work, insuring uniform treatment.

NEWS

Babbitts Play Moscow's Game

Bolsheviks of business speed
capitalism's end by aiding
transport socialism

"The most imminent menace to private enterprise in this country is not the New Deal, but the present transportation policies of the federal and state governments. Paradoxical though it be, many of the principal supporters of changes in policies necessary to make and preserve all transportation as a private enterprise are New Dealers, while their principal opponents are business interests that profess devotion to all private enterprise, and condemn New Dealers for attacking it." Such was the declaration of Samuel O. Dunn, chairman of the Simmons-Boardman Publishing Corporation and editor of *Railway Age*, at a joint luncheon on June 8 of the Indianapolis Traffic Club and the Ohio Valley Transportation Advisory Board.

"Our railroads are in every sense a private enterprise—they are privately owned; pay all their costs from their earnings; pay large taxes used entirely for the support of the local, state and national governments; and are regulated as no other carriers are.

"Excepting pipe lines, no other class of commercial carriers is entirely a private enterprise. The barge line on inland waterways owned and operated by the federal government is plainly a socialistic enterprise. Private citizens own the other boats and barges but use waterways provided and maintained entirely by taxes. Commercial carriers on the highways dispute the well-supported claim that the public pays in taxes a large part of the costs that their use of the highways causes. But it is beyond dispute that to whatever extent the true and total costs of conducting any business, whether on waterways, highways or any other public property are paid from taxes, that business is to that extent a socialistic enterprise, and not a part of private enterprise. The carriers that are in whole or in part socialistic are constantly increasing the portion of our total commercial traffic they handle. Therefore, our transportation is daily becoming more largely socialistic.

"Do those business interests that pretend to be in favor of a system of private enterprise really mean what they say? One acid test is whether they favor subjecting all carriers to equal regulation and requiring them all to pay from their own

earnings all the costs of rendering their service. And it is another indisputable fact that numerous members of business organizations, while crying out to high heaven against New Deal policies attacking private enterprise, are at the same time covertly or openly opposing every proposal and effort to make all transportation a private enterprise by equalizing regulation and requiring all carriers to pay all their own costs.

"Unless we speedily make all transportation a private enterprise, we will not be able much longer to preserve any of it as a private enterprise. For no part of transportation or any other industry can indefinitely remain a private enterprise if subjected, as the railroads now are, to competition on all sides, backed by the regulating and taxing power of government. Is anybody fool enough to believe the government would continue to discriminate against the railroads as at present after it became their owner?

"It is inconsistent and dishonest for business interests to pretend to be in favor of private enterprise, and at the same time practice and promote policies plainly tending to destroy a large part of it. Business has right now its best and, perhaps, its last, opportunity to arrest the rapid trend toward socialization of all transportation. There is now pending in Congress legislation (Senate bill 2009), which would arrest and probably reverse this trend.

"If this and additional similar legislation is defeated by business opposition, the time may come when every business man will recall its defeat as the most deadly single blow ever dealt to private enterprise in this country. And, if so, they will recall it as a blow dealt private enterprise in its own house by certain of its professed friends in an effort to serve their own selfish interests regardless of the effects upon the railroads, all other private enterprise and every American taxpayer."

Bush Terminal Qualifies as Self-Insurer

The Interstate Commerce Commission, Division 5, has granted the application of the Bush Terminal Company, New York, for authority to qualify as a self-insurer under the Motor Carrier Act's section 215.

Forwarder Case Reopening Denied

The Interstate Commerce Commission has denied the petition filed on behalf of the Illinois Central, the Louisville & Nashville and other carriers for a reopening, reargument and reconsideration of the report and order and supplemental report and order in the Freight Forwarding Investigation.

Lawyers Wrangle Over Revamp Bill

S. 1869 is put on the griddle
by eminent attorneys before
House committee

A subcommittee of the House judiciary committee headed by Representative Chandler, Democrat of Tennessee, continued hearings this week on S. 1869, the Wheeler-Truman railroad reorganization court bill recently passed by the Senate and on H. R. 6369, a companion bill introduced by Representative McLaughlin, Democrat of Nebraska. The first witness at the June 12 session of the committee was Louis B. Wehle, a New York City attorney who represents a protective committee of Chicago & Eastern Illinois bondholders. Mr. Wehle told the committee at the outset that he favored the bill as it passed the Senate but went on to say that there were certain defects in it which he wished to point out to the committee.

He characterized the measure as a "wide step in the right direction" and added that "it has serious defects in it and it is not going to work any miracles." Taking up the bill in detail, Mr. Wehle criticized the plebiscite feature of the present section 77 which is continued in the new bill. He told the committee that he believed this voting right which allows the Interstate Commerce Commission to submit the reorganization plan to all the various classes of creditors for their acceptance or rejection is a serious defect and presents grave constitutional questions as to its legality.

Also, Mr. Wehle would eliminate that section of the measure which declares the policy of the government regarding railroad reorganizations. He also criticized that portion of the bill which provides that the debtor company shall draft and submit to the court the new mortgages, leases, and other legal instruments which must be drawn up before the new company can take over the assets of the bankrupt company. He felt that this would give the debtor company a right it did not deserve in that despite the fact that it no longer had any interest in the property, it would be able to dictate the terms of the new mortgages and leases. Instead of this procedure, Mr. Wehle would have the bill provide for the appointment of a special master who, in conjunction with a committee representing various creditor interests of the company, would draft necessary legal papers.

(Continued on page 1053)

Magazine Editors Role in Selling

Can play important part in selling their roads to reader, says J. R. Coulter

Railroad magazines should be designed to sell railroad transportation, according to J. R. Coulter, general traffic manager of the St. Louis-San Francisco, who spoke before a meeting of the American Railway Magazine Editors Association in Chicago on June 10. "You magazine editors," he continued, "occupy a unique position in the new era of salesmanship. You direct printed salesmanship. The product you manufacture characterizes the railroad you work for much in the same manner as the physical equipment of the railroads does. When your magazines look like last century products, they fail to do the railroads justice."

"Not only the appearance of the magazine but the function of magazines has changed in recent years. There was a time when the railroad magazine performed the task of the country newspaper in printing the chit-chat of personal news and gossip items. Today the railroad magazine has grown in importance and you editors must expand yourselves to the new stature of your jobs. You have more than a country newspaper type of magazine to edit today. You have the task of inculcating in the minds of all your readers the doctrines of the new era of salesmanship. Your magazines must be the printed missionary which ushers in the new without too recklessly disturbing the old."

"You have all heard of that new term which has come into the language, public relations. Public relations is just beginning to be understood as one of the greatest forces as well as the greatest problems of industry. I need not go into the meaning of public relations with you editors because most of you have been studying the subject during the last several years and understand something of its function and importance. It seems to me that in this new factor of public relations another new function is imposed upon you, and likewise a new opportunity is afforded you for service."

The program also included an address by G. A. Radford, publicity manager of the Cleveland, Cincinnati, Chicago & St. Louis, on "Just What Is Our Job," another by A. C. Kalmbach, editor of Model Railroaders, and another by Mrs. T. V. Merrill, supervisor of dining car service of the Union Pacific.

The fall meeting of the association will be held at White Sulphur Springs, W. Va.

Miss Merrill showed how passenger service on the Union Pacific is designed to give "sympathetic and personalized" service. "On our streamliners," she said, "we serve a continental dinner, which is a seven course meal accompanied by wine, with an after-dinner liquor. Each guest is asked at which hour he wishes to dine. This is good psychology, for you know we are all egotists. When a steward asks, 'Mrs. Jones, when do you wish to dine?'"

I. C. C. Probe of Competitive Produce Terminals at Denver

Competitive railroad produce terminals in the process of construction at Denver, Colo., have been made the subject of an investigation instituted by the Interstate Commerce Commission on its own motion. Railroads named in the order in the proceeding (No. 28262) are: Union Pacific; Chicago, Burlington & Quincy; Colorado & Southern; Denver & Rio Grande Western; Atchison, Topeka & Santa Fe; and Chicago, Rock Island & Pacific.

The investigation, the order states, will be "with a view to determining whether said terminal projects are consistent with economical and efficient management . . . and whether they will result in unnecessary duplication of produce terminals and wasteful expenditure of funds, and with a view to determining whether the proposed construction, operation and management of said terminals have, or may, result in violation of" the Interstate Commerce Act or related statutes.

she feels that she is getting special attention—she's an individual, a guest.

"Then in the dining room the guest is seated, but instead of having to ponder over a menu covered with French and foreign terms, she makes her choice as the waiter passes to her the tray on which are several selections. In short, we make dinner an occasion."

"Our company is featuring American products, prepared in an American way, for we find by actual survey that only 5 per cent of the traveling public likes the unusual dishes. People like food that they know something about. In building our menus we stress the foods of the territory through which the train passes."

"Our menus are completely changed once a month. We have a different menu for each meal of the trip. We now boast of a brand new test kitchen in our Omaha Commissary where all our recipes are developed. A traveling chef is responsible for the preparation of foods in each district. It is his duty to ride the dining cars and work with the crews to see that our ideas on food preparation are carried out."

Fourth-Section Relief on Southeast Oil

The Interstate Commerce Commission, Division 2, has granted the railroads conditional fourth-section relief in connection with rates on gasoline, kerosene and fuel oil in tank cars from Virginia, South Atlantic and Florida ports to points in North Carolina, South Carolina, Alabama, Georgia and Florida. The decision in Fourth Section Application No. 17624 with its report by Commissioner Aitchison reveals that the railroads, having made a couple of previous cuts, have decided to further reduce the rates involved, in an attempt to hold traffic now being handled by them and to regain some of the traffic lost to truck and barge-line competitors.

Hits Adjustment Board Procedure

M. J. Gormley thinks referees issue calls for a bit of collective bargaining

Differences that have arisen between the railroads and their employees with reference to the National Adjustment Board comprise "another case for collective bargaining" according to the view expressed by M. J. Gormley, executive assistant of the Association of American Railroads in a June 13 address on "Labor Relations in the Railroad Industry" before the National Catholic Social Action Congress at Cleveland, Ohio. Because the Adjustment Board procedure, which has stimulated "bitter" and in his opinion "entirely justified resentment" on the part of railroad managements, "is not one determined by the provisions of the law," Mr. Gormley ventured the hope that the difficulties could probably be resolved "without the necessity for intervention through legislation."

The "Railroad Program" calls for Railway Labor Act amendments, but that phase of it has not been pressed since the A. A. R. board of directors endorsed the committee-of-six report and urged upon Congress the adoption of the legislative program brought forth by that joint labor-management group.

Mr. Gormley came to his discussion of the Adjustment Board matter after he had devoted more than half of his address to painting the "rosy" side of the railroad labor-relations picture. In this connection he touched upon the beginnings and subsequent development of several unions in the railroad field, stating that as nearly as can be approximated the standard labor unions at present have an aggregate railway employee membership of 800,000. This figure does not include Pullman Company and Railway Express Agency employees. As evidence of the working of collective bargaining, the A. A. R. executive assistant listed a number of voluntary agreements reached during the 1932-1937 period. The list ran from the wage-deduction agreement of the former year through the more recent wage-increase and pension agreements of 1937 and the committee-of-six program. Mr. Gormley called that committee's work "a highly commendable piece of cooperation;" and found in its report encouraging evidence of a "greater recognition" of the fact that "the problem of the railroads is, after all, that of the employer and employee . . ."

He did not, however, want to leave the impression that everything in railroad labor relations is "serene and satisfactory," although "in the main, this is true . . ." Here came Mr. Gormley's discussion of Adjustment Boards in which connection he first explained briefly the set up of those agencies for deciding disputes or grievances that grow out of interpretation or application of agreements in effect on various railroads. Most of the disputes, he explained, fall within the jurisdiction of the Board's First Division which deals with train and engine service employees.

These are about 25 per cent of the total number of employees, but their grievances have been approximately five times as numerous as those brought before the Board's other three divisions which have jurisdiction over about 75 per cent of the employees. At the close of the fiscal year ended June 30, 1938, Mr. Gormley said, the First Division had docketed 6,080 cases, the Second Division 270 cases, the Third Division 748 cases and the Fourth Division 20 cases. The net result, he added, is that the First Division "is about two years behind in its work;" and "after three and one-half years operation the work of that division is not growing less, as anyone would naturally expect, but is increasing."

"In the judgment of many," the A. A. R. executive assistant went on, "that situation that has developed in the First Division is due in very large part to the decisions handed down by 'referees';" and he proceeded to explain how these referees get the deadlocked cases, and how the Board, in searching for the "detached" viewpoint, "has felt compelled generally to name men entirely without railroad experience." As a result, "referees have given decisions in cases in which they had very little comprehension of the real issue before them, or the far-reaching effects of their decisions."

"Under an existing rule in the engine, or train or yard service agreements of scores of carriers," Mr. Gormley further explained, "there may be a practice in effect that has gone on for years and years without challenge by the employees because they concede that the practice is entirely proper and in full compliance with the rule. On some road a committee raises an objection to the practice on that road, the dispute goes to the First Division, there is a deadlock and the case is passed up to a referee. The referee puts a wholly unwarranted construction on the rule involved and sustains the committee. These decisions finally get into the hands of all managements and of the employees' committees on all roads, and the committees on many roads promptly call on the management to change the unchallenged practice of many years standing on their respective roads and apply the decision of the referee. The managements, feeling that their long-established and unchallenged practice is wholly proper, under their rule naturally decline the request of the committees. These disputes are then carried to the First Division of the Adjustment Board and its already congested docket of pending cases grows by leaps and bounds. Therefore, many of the decisions by referees are not settling disputes but are creating new disputes and creating friction and dissatisfaction where peaceful relations had formerly existed."

Next, Mr. Gormley listed decisions in cases dealing with discipline as "another of the serious grievances which the managements have against referees." Some of the referees in discipline cases, the A. A. R. executive assistant asserted, "have reinstated engine and train service employees who had been in accidents where it was clearly shown by the record that their negligence had been responsible for the

Rutland Receiver Asks Court to Order Wage Cut

Tiring of delays by the National Mediation Board, L. G. Morphy, receiver of the Rutland, has asked the federal district court at Rutland, Vt., to direct him to reduce wages on a sliding scale of from 10 to 30 per cent. Since October 1, 1937, the road's deficits (amount available for fixed charges, interest on equipment trust certificates and unfunded debt, but without deduction for bond interest) have amounted to \$685,516. Hence, says the petition, "continued operation without a reduction in wages will result in increasing greatly the debts of your petitioner which can be paid, if at all, only by discontinuing operations and selling the railroad as junk."

On December 9, 1938, Receiver Morphy gave notice of intention to reduce wages on a basis similar to the court order here requested. The services of the National Mediation Board were invoked after refusal of employees to accept the reduction, but were suspended in April, due to the unwillingness of brotherhood representatives to mediate the wage reduction until settlement of certain claims on a portion of wages withheld pursuant to a court order of July 12, 1938. In his current petition, the receiver asserts that by such refusal to mediate the employees are no longer entitled to the benefits of the Railway Labor Act with respect to present schedules of pay and the action of the Mediation Board in sustaining this refusal to mediate is unlawful and in violation of the Act and "releases your petitioner from any prohibition against immediately reducing wages."

accident . . . and in other cases where the referee in the decision admitted that the employee involved had been guilty of a serious lapse. In cases of this kind these referees have airily waved aside the judgment of responsible management and ordered the restoration of these dismissed employees 'with seniority unimpaired.' This means that the employee is given the right "to select any train to which he may become entitled by virtue of his seniority, no matter how important such train might be or how serious it might be to have a man in a responsible position on such a train whose record showed him careless in the observance of operating and safety rules. . . ."

"All of this," Mr. Gormley said in closing, "certainly comes within the realm of possible settlement by collective bargaining."

Open Hearings on Labor Cases on Santa Fe

Hearings on 186 cases brought against the coast lines of the Atchison, Topeka & Santa Fe by four labor organizations, the Brotherhood of Locomotive Engineers, the

Brotherhood of Locomotive Firemen and Enginemen, the Order of Railway Conductors and the Brotherhood of Railroad Trainmen, were begun by the National Railroad Adjustment Board at its Chicago office on June 12. The first of the cases, which is expected to extend over several weeks, was a charge that the Santa Fe had failed to make assignments around Phoenix, Ariz., in 1936 during the melon and lettuce season and that the crews were held away from home an unreasonable length of time for the fulfillment of duties.

Advisory Boards to Hold National Meeting October 31-November 1

The National Association of Shippers' Advisory Boards will hold its third annual meeting in Chicago on October 31 and November 1.

Auto Rate Hearing September 19

September 19 has now been set as the date for the Detroit, Mich., hearing in connection with the Interstate Commerce Commission's investigation of rail, motor and water rates on new automobiles. The hearing was previously scheduled for June 13.

Frisco Fast L. c. l. Service to Southeast

A new fast less-than-carload freight service has been inaugurated between St. Louis, Mo., and Kansas City and Pensacola, Fla., by the St. Louis-San Francisco, which will provide second morning delivery from these cities to the south. On the return trip, second morning delivery likewise will be given these points, with improved connections at Memphis for western and eastern, as well as northern points.

Robert H. Ford Given Honorary Degree

An honorary degree of Doctor of Engineering was conferred upon Robert H. Ford, chief engineer of the Chicago, Rock Island & Pacific, by Norwich University at Northfield, Vt., on June 12. The degree was conferred for "outstanding work in the field of engineering." Mr. Ford is a graduate of Norwich University and a member of its Board of Trustees. He began his railroad career with the Central Vermont in 1892, and was later employed by the Missouri Pacific. He entered the employ of the Rock Island in 1912 as special engineer in charge of track elevation work in the Chicago area. He was made assistant chief engineer in 1936 and on April 11, 1937, was promoted to chief engineer. Mr. Ford is a past president of the American Railway Engineering Association.

Allegheny Advisory Board Meets June 22

The Allegheny Regional Advisory Board will hold its 41st regular meeting at Odd Fellows Temple, Canton, Ohio, on June 22. At a noon-day luncheon sponsored jointly by the Canton Chamber of Commerce and the Canton Traffic Club. J. M. Hood, president, American Short Line Railroad Association, will be the guest

speaker. Among the more important committee reports will be that of the legislative committee presented by J. B. Keeler, assistant general traffic manager of the Koppers Company, which will deal especially with the repeal of land grant rates. A proposal to change the size of the standard freight car will be presented by D. O. Moore, traffic manager, Pittsburgh Chamber of Commerce. E. C. Jepson, general traffic manager, Wheeling Steel Corporation, will present a paper on the shippers' opportunities to increase freight car efficiency.

Bus Revenues Up 6.5 Per Cent in February

Class I motor carriers of passenger reported February revenues of \$6,513,645 as compared with \$6,115,742 for February, 1938, an increase of 6.5 per cent, according to the monthly compilation prepared by the Interstate Commerce Commission's

by 40,672 employees. During the five years a total of 78,450 employees reported their activities, and 39,258 "tips" on freight business and 16,341 on passenger business were received.

That the program is growing is indicated by the fact that the number of employees reporting in 1938 was 2,479 more than in any previous year.

"General Pershing" to Connect with "Exposition Flyer"

The run of the General Pershing Zephyr of the Chicago, Burlington & Quincy, between St. Louis, Mo., and Kansas City, was extended to Lincoln, Neb., on June 10, at which point it connects with the Exposition Flyer for San Francisco, Cal. A St. Louis-San Francisco standard Pullman sleeping car has been added to the consist of the General Pershing, while one of the stainless steel reclining chair cars of the General Pershing is being operated

effect 60 days after their submission to Congress if they were not disapproved by either house, but in order to start the new agencies at the beginning of the fiscal year, a joint resolution was passed which will place both of them in operation on July 1.

Southwestern Board Meeting

The Southwestern Shippers' Advisory Board, at its annual meeting at Oklahoma City, Okla., on June 6 and 7, voted to oppose the resolution introduced by Senator Reed of Kansas, S. J. Res. 117, making it unlawful for carriers to handle less than carload lots of freight, except through a central agency. Fear was expressed that such legislation would further extend government control over the operation of railroads. The board also passed a resolution requesting the Association of American Railroads to speed up its study of the advisability of lining steel cars with wood to check damage from sweating.

Members of the Southwestern Industrial Traffic League, meeting with the railroad contact committee, expressed confidence that railroads will be prepared to handle the 1939 wheat crop without congestion if shippers and elevators co-operate by promptly unloading, releasing and re-consigning cars during the peak of the wheat shipping period. Present officers of the board were re-elected.

	Passenger Revenue		Passengers Carried	
	February 1939	February 1938	February 1939	February 1938
New England Region	\$349,770	\$304,559	935,220	811,988
Middle Atlantic Region	1,005,851	872,278	2,293,856	2,127,613
Central Region	1,119,107	937,475	1,477,937	1,320,855
Southern Region	1,550,702	1,522,708	1,792,084	1,695,649
Northwestern Region	233,065	229,545	245,230	245,492
Mid-Western Region	501,525	493,316	435,737	430,887
Southwestern Region	856,659	854,977	913,529	905,445
Rocky Mountain Region	76,580	78,087	67,363	71,762
Pacific Region	820,386	822,797	969,160	853,130

Bureau of Statistics and Bureau of Motor Carriers from 145 reports representing 146 bus operators. Passengers carried increased 7.9 per cent from 8,462,821 to 9,130,116. In the same month, railroad passengers (excluding commutation) were 13 per cent lower than in the equivalent 1938 month, and revenues were down 4 per cent. The figures for bus traffic by regions are shown in the accompanying table.

Employees Bringing Million a Year in Business to B. & O.

The results of the first five years of the Baltimore & Ohio's Co-operative Traffic Program are reviewed in a recent issue of the railroad's employees' magazine. According to O. S. Lewis, general freight traffic manager, participants in the program secured a total of 108,037 carload shipments, 95,877 less-carload shipments and 167,062 passengers during the five years between November, 1933, and 1938. Assigning an average revenue per carload of about \$50, it is estimated that the gross revenue brought to the road for the five years was about \$5,400,000, or an average of over \$1,000,000 per year.

The Co-operative Traffic Program was started five years ago as an effort to encourage the soliciting of business by employees and officers of the road outside of their regular duties. It is pointed out that since its inauguration, at no time has the number of persons assigned exclusively to do the organizing and detailed work exceeded three, and even these have frequently been assigned to duties outside the program. Between November, 1937 and 1938, 761 meetings were held at various points on the road which were attended

through to Denver on the Exposition Flyer from Lincoln. For the return trip, the schedule of the General Pershing has been adjusted so that it can pick up the St. Louis sleeping car and reclining chair car upon the arrival of the Exposition Flyer from San Francisco. With this added equipment, the General Pershing still maintains its five hour schedule between St. Louis and Kansas City. The train leaves St. Louis at 2:15 p. m. instead of 3 p. m. and arrives in Kansas City at 7:15 p. m. instead of 8 p. m. and Lincoln, Neb., at 11:55 p. m. Returning it leaves Lincoln at 3:30 a. m. and Kansas City at 8 a. m. as at present and arrives in St. Louis at 1 p. m. as at present.

Reorganization Plans Become Effective July 1

Both houses of Congress have approved a joint resolution which will put into effect on July 1, President Roosevelt's two major reorganization plans which he submitted to the Congress on April 24 and May 9. As pointed out in the *Railway Age* for April 29, page 751, plan No. 1 affects the Reconstruction Finance Corporation and the Bureau of Public Roads, the former being placed in a new Federal Loan Agency and the latter being transferred from the Department of Agriculture to the newly-created Federal Works Agency.

Plan No. 2, which was reviewed in the *Railway Age* for May 13, page 846, will transfer the Inland Waterways Corporation from the War Department to the Department of Commerce and will abolish the National Bituminous Coal Commission and the office of Director General of Railroads. Both plans would have gone into

N. Y. R. R. Club Disports Itself

The annual outing of the New York Railroad Club on June 8 at the Westchester Country Club, Rye, N. Y., attracted some 833 railroad and supply men. This compares with a total of 817 outing tickets purchased last year. Outdoor entertainment included not only the usual golf tournament, tennis and quoits, but as well a "midway" amusement area in the style of the gay 'nineties, a soft ball baseball game between two girls' teams and four fife-and-drum corps. A banquet ended the day.

There were 375 entries in the various golf tournaments. The H. H. Vreeland trophy was won for the second year by the New York Central team with a score of 305. The winning team included Harry Nunn, West Springfield, Mass.; G. H. Ingalls, New York; W. J. Sasso, Cleveland, Ohio; and F. W. Felde, Jackson, Mich. The David M. Brady cup was won by Mr. Nunn who played a gross score of 72 and net of 67.

George W. Jones, vice-president of the Brooklyn-Manhattan Transit Corporation and president of the club, presided at the banquet.

H. D. Pollard Appeals to Public on Adjustment Board Absurdities

Oppressive burdens laid on the carriers by the National Railroad Adjustment Board come in for sharp criticism in the current issue of "Talking Points" issued by H. D. Pollard, receiver, Central of Georgia. The writer is of the belief that the appointment of adjustment board referees is not removed from political influence and that it is not beyond belief that the referees "enjoy their work and would

appreciate further appointments,"—hence their friendliness to labor. Here Mr. Pollard points out that the referees are paid \$75 per day, plus expenses, although they are usually not men of practical experience in transportation affairs. For example the Congressional Record of March 22, 1939, lists a resident of Chicago named Millard who last year received \$12,412.50 for 165 days' work under appointment by the National Mediation Board. At the same time he carried on his regular work in private employment.

The writer also complains that the employees' organization, encouraged by past findings of the Adjustment Board, have not been content to deal with current problems, "but have gone back for years and dug up issues that give promise of penalizing the railroads." He then goes on to illustrate the workings of the board by a *reductio ad absurdum*. A dairyman had two employees to look after his accounts. By a natural division of duties one fed and watered the stock, the other did the milking and delivered the product. Came hard times and the dairyman displaced one of the men and had the other look after the stock and deliver the milk. The displaced man belonged to the Brotherhood of Cow Drivers, therefore, he carried the case to the National Milk Adjustment Board. That board, without taking into consideration the loss of customers or the dairyman's ability to pay, decided that the dairyman was under contract with both employees, and that he must pay both. Therefore the displaced man, though he had not done a lick of work for the farmer, was paid full wages since displacement, and the other man, in addition to the wages he had received, was paid, at the cow-driver's scale, for every duty performed by him that had previously been assumed by the displaced man with the net result of three days' pay for one day's work, and in the event he worked longer hours than in the past, he was also paid for such additional time at the overtime rate."

Appealing to the public generally, Mr. Pollard goes on to write:

"People not informed of the real situation sometimes refer to the railway labor laws as 'models' because strikes and disturbances are rare. They are 'models,' but 'models' of inequity, in that they are so constructed as to deprive the employer of even a remote chance of justice. The practical effect of these laws is to say to the employee, 'These jobs are yours. Do with them as you will. Charge your employer what you please. Dictate your own working conditions. Do not concern yourselves with the ability of your employer to pay. Let your conscience (if you have one) be your guide.'"

Freight Car Loading

Loading of revenue freight for the week ended June 10 totaled 634,597 cars, the Association of American Railroads announced on June 15. This was an increase of 66,865 cars, or 11.8 per cent, above the preceding week when loadings were reduced somewhat due to the Memorial Day holiday, an increase of 80,743 cars, or 14.6 per cent, above the corresponding week in 1938; but a decrease of 115,903 cars, or

15.4 per cent, below the same week in 1937.

As reported in last week's issue, the loadings for the previous week ended June 3, totaled 567,732 cars, and the summary for that week, as compiled by the Car Service Division, A. A. R., follows:

Revenue Freight Car Loadings			
For Week Ended Saturday, June 3			
Districts	1939	1938	1937
Eastern	115,293	106,710	142,091
Allegheny	107,846	89,438	141,471
Pocahontas	44,076	33,513	44,397
Southern	85,360	81,119	99,582
Northwestern	88,554	69,289	118,312
Central Western	86,599	81,290	93,535
Southwestern	40,004	41,258	47,599
Total Western Districts	215,157	191,837	259,446
Total All Roads	567,732	502,617	688,987
Commodities			
Grain and Grain Products	30,291	26,332	22,124
Live Stock	9,770	11,366	10,423
Coal	92,611	86,599	104,857
Coke	5,256	4,204	9,201
Forest Products	27,340	24,501	37,448
Ore	38,987	21,381	73,415
Merchandise l.c.l.	133,316	130,035	149,334
Miscellaneous	230,161	198,199	282,185
June 3	567,732	502,617	688,987
May 27	627,674	562,076	790,503
May 20	615,966	545,789	775,074
May 13	555,396	541,808	769,560
May 6	572,857	536,149	763,495
Cumulative Total, 22 Weeks	12,762,137	11,973,591	15,964,597

In Canada.—Carloadings for the week ended June 3 totaled 43,938, compared with 41,572 in the previous week (which contained a holiday) and 43,171 a year ago, according to the compilation of the Dominion Bureau of Statistics.

	Total Cars Loaded	Total Cars Rec'd from Connections
Total for Canada:		
June 3, 1939	43,938	18,468
May 27, 1939	41,572	20,335
May 20, 1939	47,081	23,734
June 4, 1938	43,171	18,925
Cumulative Totals for Canada:		
June 3, 1939	937,916	494,671
June 4, 1938	972,975	466,606
June 5, 1937	1,042,247	621,994

"Exposition Flyer" Has Overflow on Inaugural Run

Demand for accommodations on the Exposition Flyer, placed in service between Chicago and San Francisco by the Chicago, Burlington & Quincy, the Denver & Rio Grande Western and the Western Pacific on June 10, was so great that six extra sleeping cars and an extra dining car were added to handle the overflow business. As a result, train No. 9, which departs from Chicago at 10:30 a. m. with head-end business and carries local traffic for the Exposition Flyer, with which it combines at Ottumwa, Iowa, was operated through to San Francisco as a second section. Demand also necessitated similar handling on June 13 and June 15. On June 17 and 18 the train was operated from Chicago in two sections, with which No. 9 was combined at Ottumwa.

Inaugural ceremonies at Chicago consisted of a christening with a mixture of waters from San Francisco Bay, Feather River canyon, Great Salt Lake, the Colorado, Missouri and Mississippi rivers and Lake Michigan, music by the Aurora, Ill., high school band and brief addresses by Albert Cotsworth, passenger traffic man-

ager of the Burlington; Hugh Scofield, passenger traffic manager of the Denver & Rio Grande Western; and Joseph Wheeler general passenger agent of the Western Pacific. Five hostess-nurses who are part of the personnel of this train service impersonated Miss Treasure Island, Miss Feather River Canyon, Miss Salt Lake City, Miss Denver and Miss Chicago.

New York Central Adds Scenic Train to East

The Niagara, a new Chicago, New York train, was placed in service by the New York Central on June 18 for the accommodation of vacation travelers drawn to the east and the New York world's fair. With departure from Chicago at 8:45 p. m. daily except Sundays, the schedule permits enjoyment of the most striking scenic parts of the trip in the daylight hours. There will be a 4½-hr. stop at Niagara Falls, in the forenoon, while during the afternoon the train will run through Mohawk River valley, turning southward in the early part of the evening along the shore of the Upper Hudson river south of Albany. The train arrives in New York at 9:25 p. m. the next night after consolidating with the Empire State Limited at Buffalo.

Extension of the eastbound run of the New York Central's Empire State Express to originate at Detroit, Mich., was made effective Sunday, June 18. The train already affords a New York-Detroit service leaving New York at 8:50 a. m. and arriving in Detroit at 9:05 p. m. On the new eastbound schedule the Empire leaves Detroit at 8:30 a. m. and arrives in New York at 9:25 p. m.

Hearings on Revised New Haven Reorganization Plan

Interstate Commerce Commission hearings in the reopened New York, New Haven & Hartford reorganization proceeding got under way in Washington, D. C., on June 14 before Commissioner Mahaffie and Examiner Wilkinson. The first witness was E. G. Buckland, chairman of the New Haven board who explained the debtor's revised plan of reorganization and the considerations which led to its adoption. Among the recent intervenors was the Railway Labor Executives' Association which opposes the contemplated abandonment of certain lines of the Old Colony.

The revised plan which proposes annual fixed charges of \$6,402,102 was highlighted in the *Railway Age* of January 7, page 106; it was formulated by the debtor corporation after the commission had reopened the case following publication of the proposed report (reviewed in the *Railway Age* of June 18, 1938) wherein Examiner Wilkinson recommended that the commission postpone the approval of any reorganization plan until such time as it was possible to devise more reliable estimates of future earnings prospects. In his June 14 testimony Chairman Buckland stated that the debtor believes it to be "of vital importance to all interests concerned that a plan of reorganization be approved

as promptly as possible in order to minimize the rapidly mounting expenses of reorganization and to curtail the tremendous increase in its present debt through the accrual of unpaid interest on its various obligations."

With reference to the coverage of the revised plan's above-mentioned fixed charges of \$6,402,102, Mr. Buckland stated that such charges would have been covered by the \$7,736,700 average earnings of the past six years, earnings having been above the prospective fixed-charge total in each of those years save 1938. Meanwhile 1939 earnings have been better than was anticipated, and the New Haven expects to end the current year with about \$8,200,000 available for fixed charges. Also, a like showing is expected to be made in 1940.

In connection with the proposed Old Colony abandonments, Mr. Buckland referred to studies made at the direction of the court by a special committee headed by William J. Cunningham, professor of transportation at Harvard Business School, which committee reached the conclusion that passenger services on Old Colony lines in the Boston, Mass., area cannot be operated profitably. With respect to the Boston & Providence, the witness said that the New Haven has proposed what it regards as equitable terms for the acquisition of that property.

Following Mr. Buckland in turn were G. T. Carmichael, comptroller of the New Haven, and H. W. Dorigan, executive assistant to the trustees. The former introduced and explained a series of financial exhibits setting forth revisions of previous estimates in the light of the latest available data; while Mr. Dorigan did a similar job in connection with his revised exhibits showing earnings segregated by leased and mortgaged lines.

Old Colony Seeks to Abandon Boston Passenger Service

The trustees of the Old Colony, at present operated by the New York, New Haven & Hartford, have informed Governor Saltonstall of Massachusetts that they are taking steps to discontinue all passenger service now being operated in and through the Boston (Mass.) district, effective September 24. Lines to be affected comprise the following:

- Boston and Braintree
- Boston and Greenbush
- Boston and Whitman and Plymouth
- Boston and Brockton and Middleboro
- Boston and Buzzard's Bay and Hyannis
- Boston and Buzzard's Bay and Woods Hole

Their letter goes on to state, "Unless the heavy losses which are now being incurred in the operation of passenger service can be eliminated, we have no alternative but to petition the Interstate Commerce Commission for the complete abandonment of the rail lines in the Boston district. This would mean that the communities in that district would be deprived of freight service as well as passenger service."

In this connection, they remind the governor that operation of the Old Colony has been for its own account since October, 1935, and the operating deficits have been paid out of funds advanced by the

estate of the New Haven, which advances, according to the courts, constitute a lien on the Old Colony prior even to the mortgage bonds. An independent study pursued by Professor W. J. Cunningham of the Harvard School of Business Administration has shown that the greater part of Old Colony losses have been incurred in the operation of passenger service in the Boston district. Even since the curtailment of train service and abandonment of certain passenger stations a year ago, losses incurred from this service exceed \$1,600,000 annually. For each \$1 of passenger revenue received, the Old Colony is spending \$1.87 to provide the service, the letter states.

Retirement Board Rulings and Pension Data

Indefinite furlough rights were restored to Wabash shopcraft employees through an agreement made effective by the receivers of that road on February 1, 1934, part of which abolished the 18-month-furlough limitation previously in effect, according to a recent ruling of the Railroad Retirement Board. The effect of the ruling, as interpreted in the latest issue of the Weekly Review put out by the Board's Bureau of Research and Information Service, is to place in an employment relation on August 29, 1935, those of the furloughed Wabash employees who had lost or would have lost their employment relation by reason of the 18-months furlough limitation.

The August 29, 1935, date is that on which an employee must have had an employment relation to the railroad industry in order to obtain prior service credit under the Railroad Retirement Act. In the Wabash case the Board held that the indefinite-furlough agreement constituted the amendment of a rule so as to create anew an employment relationship which had lapsed.

In another recent ruling the Board held that service rendered under contracts between the Cleveland, Cincinnati, Chicago & St. Louis and the Railway Service & Supply Company in the freight car and locomotive repair shops at Beach Grove, Ind., and Brightwood, may be credited toward Retirement-Act annuities. In this connection the Board upheld the ruling of its general counsel that service in both shops from March 1, 1922, to March 31, 1933, the period covered by contracts, is creditable as service to the railroad company. Also, the Boston & Maine Transportation Company and the Reading Transportation Company, subsidiaries respectively of the Boston & Maine and the Reading, have been held to be employers under the Retirement Act.

The Review also reveals that May collections by the Bureau of Internal Revenue under the Carriers Taxing Act amounted to \$6,103,403, somewhat less than May's benefit payments aggregating \$9,181,704, "the largest amount paid out in a single month in the course of the Board's operations." Total collections from the beginning of operations in October, 1937, until the end of May have been \$238,222,850, and total payments have amounted to \$185,349,359. Meanwhile, fewer applications for employee annuities were made in May than in

any other month of the current fiscal year—1,984 as compared with 2,014 in April and an average of 2,455 a month from July, 1938, through last March.

Santa Fe Inaugurates "Valley Flyer"

The Valley Flyer, a new six-car streamlined, air-conditioned train, was placed in service by the Atchison, Topeka & Santa Fe on June 11, between Bakersfield, Cal., and Oakland to connect at both cities with streamlined buses for San Francisco and Los Angeles. The train, consisting of one combination baggage-club car, one refreshment car, three chair cars equipped with the latest type seats, and a diner, leaves Bakersfield daily at 6:30 a. m., and arrives in Oakland at 12:35 p. m. where it connects with buses operating by way of the San Francisco-Oakland Bay bridge and arriving in San Francisco at 1 p. m. Southbound, buses depart from San Francisco at 1:30 p. m., connecting with the Valley Flyer in Oakland at 1:55 p. m., which arrives in Bakersfield at 8 p. m., where it connects with buses which operate by way of the Ridge route and arrive in Los Angeles at 11:25 p. m.

In addition to this improvement, forty additional new air-conditioned, streamlined buses of the latest type will be placed in California service during June. Bus schedules from San Diego to San Francisco have been improved, running time has been speeded up and additional bus service provided for practically all points in the state served by the company.

Lawyers Wrangle Over Revamp Bill

(Continued from page 1048)

Turning to the subject of securities, Mr. Wehle urged the committee to set up definite standards for the issuance of new securities so that each bond issue would have a sinking fund to amortize it over a period of years. He also thought the stockholder should be given more definite protection and closed his discussion by urging the committee to provide for the issuance of warrants to stockholders in the old company so that if times ever get better, they will be able to share in the earnings of the new company.

The second witness was E. G. Buckland, chairman of the board of the New York, New Haven & Hartford and the New York, Ontario & Western and president of the Railroad Credit Corporation. Mr. Buckland's testimony followed along the lines of that which he gave before the Senate committee on interstate commerce. He told the committee that he believed the new reorganization plans should provide for the issuance of stock even if no dividends are presently being earned on it. He would prefer to issue stock, despite the fact that it might now be worthless, rather than issue warrants to the old stockholders. Also, Mr. Buckland opposed the reorganization court, saying that he would prefer to give the circuit courts of appeal the jurisdiction which the pending measure would lodge with the new reorganization court.

The next witness was Alfred N. Heuston, a member of the bar of New York City, who appeared in behalf of most of the large banks of the city. He opposed that feature of the bill which says that trustees of railroad mortgages must show that their work benefits the entire estate rather than the special bondholder group before they are entitled to compensation from the estate. He went on to point out to the committee that trustees are personally liable for representing the mortgage holders and should not have to necessarily do work for the whole estate which might conceivably be at the expense of the bondholders which they represent.

The next witness was Luther M. Walter, co-trustee of the Chicago Great Western, who told the committee that he was appearing as counsel for the National Industrial Traffic League. He began his testimony by saying that the "League is particularly opposed to the creation of the reorganization court." Mr. Walter's testimony was, in many respects, similar to that which he gave before the Senate interstate commerce committee. Besides voicing opposition to the reorganization court Mr. Walter submitted extensive data to show the committee the progress that has been made in railroad reorganizations to date and the extent to which the commission has reduced the capitalizations of those roads in whose cases it has issued final or proposed plans. He concluded his testimony by asserting that the great bulk of the work of reorganizing bankrupt roads has been completed by the commission.

The viewpoint of the stockholders of a bankrupt road was given to the committee by Marcus L. Bell, general counsel for the Chicago, Rock Island & Pacific, who appeared in opposition to the enactment of the measure. At the outset of his testimony, Mr. Bell said that he doubted the validity of reducing the capitalization of a company by law, pointing out that such a procedure raised grave constitutional issues. He warned the committee that the equity holders of the various properties would certainly have their day in court if such a reorganization standard is enacted as is contained in the pending measure.

Mr. Bell reminded the committee that the bill changes the fundamental theory of section 77 by destroying the composition feature of it and reenacting the philosophy of the Boyd case which held that equity holders could receive no assets in a reorganized company until all other creditors had been satisfied. He then reiterated his belief that section 77 is founded on a composition theory of bankruptcy rather than on the Boyd case doctrine. In his opinion, the present bill would destroy the effects of section 77. No present reorganization plan has been worked out on the principle of the pending measure, he told the committee, and went on to say that it would destroy all the work that has been done in the pending section 77 cases.

He saw no need for "tinkering" with section 77, asserting that he preferred to let the present law have a chance. Mr. Bell also advanced the theory that the present solvent carriers may be forced into bankruptcy by the effects of the bill. His argument was that after the roads are re-

organized with a drastically reduced capital structure, they will be able, in normal times, to earn a much higher return on their new investment than other solvent roads with the result that there will be agitation for a reduction in the rates of all the carriers. When this is accomplished, the solvent roads which have been earning just a normal rate of return will be in the position of having to reduce their capital structures so that they also can show increased earnings comparable to the reorganized roads. Eventually, Mr. Bell saw complete bankruptcy for the railroad industry if the bill were enacted into law.

Mr. Bell also devoted part of his argument to what he termed "perfectly outrageous" decisions of the Railroad Adjustment Boards. He cited a case of an engineer on the Rock Island who had been reinstated by an adjustment board decision which found that he had been just "mildly intoxicated" during the time he was operating a train. "How would you like to know that the engineer who was driving the train on which you were riding at 70 miles an hour was mildly intoxicated?" Mr. Bell asked the committee. He went on to point out that the railroad has no way to attack these decisions.

Leslie Craven appeared as counsel for the Railroad Security Owners Association, which is composed of most of the large savings banks and insurance companies. He assailed the bill, saying that it did not reflect a "sound judicial approach," and criticized the Senate for what he termed an "inadequate" consideration of it. He charged that the Senate interstate commerce committee considered the bill in executive session for only two hours. Max Lowenthal, counsel to the Senate committee, denied that this was the case and entered into a sharp colloquy with Mr. Craven on this point.

Mr. Craven's arguments followed the lines of those which he used before the Senate committee. He said that the bill was not a mature piece of legislation and called it a "half-baked" measure. His group is absolutely opposed to any special reorganization court, he told the committee. Also, they do not like the reorganization standards which the backers of the measure would like to see written into the law. Mr. Craven was still occupying the stand at the time that this issue went to press. It is expected that hearings will continue at least through next week.

Interlocking Changes Approved

The Interstate Commerce Commission, Division 3, in decisions made public this week, has granted the petition of the Chicago, Milwaukee, St. Paul & Pacific for authority to discontinue a mechanical interlocking plant at the intersection of its tracks and those of the Minneapolis & St. Louis at Spencer, Iowa, and to install in lieu thereof electrically-locked crossing gates with automatic home signals operating in conjunction therewith; and that of the Cleveland, Cincinnati, Chicago & St. Louis for approval of a proposed modification involving the removal of main-track derails in the interlocking plant at its crossing with the New York, Chicago & St. Louis at Claypool, Ind.

Equipment and Supplies

C. & N. W. Budget

The petition of the Chicago & North Western for approval of its 1939 improvement budget and for authority to purchase 500 coal cars and 300 box cars was continued indefinitely by the federal district court at Chicago on June 13.

LOCOMOTIVES

THE H. C. FRICK COKE COMPANY is inquiring for three electric locomotives of the 0-4-4-0 (B-B) type.

THE BOSTON & MAINE has sent out an inquiry for six Diesel-electric switching locomotives of 600 hp. The company has not yet definitely decided to buy this equipment.

FREIGHT CARS

THE TENNESSEE VALLEY AUTHORITY contemplates buying 30 steel hopper cars of 40 tons' capacity.

THE MISSOURI-ILLINOIS has ordered 125 box cars and 25 gondola cars of 50 tons' capacity from the Mt. Vernon Car Manufacturing Company. This is in addition to the 150 cars for this road reported in the Missouri Pacific order in the *Railway Age* of April 15, page 678.

THE CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC has been authorized by the federal district court at Chicago to spend \$327,373 for new equipment and to remodel present rolling stock. The road will spend \$223,773 to construct 83 50-ton all steel box cars and \$103,600 to remodel 200 automobile cars in its own shops.

SIGNALING

GRAND TRUNK WESTERN.—Sealed proposals will be received at the office of T. P. Harris, purchasing agent of this road, 441 East Jefferson avenue, Detroit, Mich., until 10:00 a. m. (e.s.t.), June 26, for furnishing materials necessary for the installation of highway grade crossing signal protection under the federal grade crossing program in the State of Michigan.

THE CHICAGO, ROCK ISLAND & PACIFIC.—Permission has been requested from the Interstate Commerce Commission to make extensive changes and improvements in the signaling facilities on 157 miles of double-track main line between Blue Island, Ill. (Chicago) and Silvis, Ill. The changes include the installation of centralized traffic control and the modification of seven interlockings in order that trains may be operated in either direction on both main tracks. Train movements are to be directed by signal indication, thus eliminating train orders and time-table superiority. The existing semaphore signals and ramp-type train control are to be removed, color-light signals being installed in the new either-direction system. These improvements are proposed as a means of increasing safety and improving train performance.

Supply Trade

G. Fred Driemeyer, sales engineer for the **General Steel Castings Corporation**, has been promoted to assistant works manager at Granite City, Ill.

Luke E. Sawyer, assistant general superintendent of **The Babcock & Wilcox Tube Company**, Beaver Falls, Pa., has been appointed general superintendent.

Earl N. Graf has been appointed manager of the Pittsburgh, Pa., branch at 855 West North avenue of the **John A. Roebling's Sons Company**, Trenton, N. J.

Joseph T. Ryerson & Son, Inc., Chicago, has purchased the Philadelphia plant of the Taylor-Wharton Iron & Steel Company which Ryerson has been operating under lease.

The American Engineering Company, Philadelphia, Pa., has purchased the Diamond Machine Company, Providence, R. I., and will continue the manufacture of the Diamond face grinder in its Philadelphia plants.

Parker F. Wilson has been appointed president of the **Pittsburgh Steel Foundry Corporation**, Glassport, Pa., and **G. A. Hassel**, the company's former president will continue as chairman of the board of directors.

J. G. Coutant has been appointed vice-president of **Controlled Steam Generators, Inc.**, New York, in charge of engineering work in connection with the design and construction of steam generators and metallic heat recuperators with controlled-pressure circulations.

J. Frederic Wiese who has been appointed general manager of sales of the **Lukens Steel Company**, Coatesville, Pa., as was announced in the *Railway Age* of June 10, was born at Parkesburg, Pa., in



J. Frederic Wiese

January, 1899, and was educated in the Parkesburg schools and Swarthmore college, from which he was graduated in 1921, with the degree of bachelor of arts. He then joined the Chicago sales office of the Parkesburg Iron Company and for four years was engaged in the sale of

boiler tubes to the railroads. In 1925, he was transferred to the home office of the same company. The following year he went with the Lukens Steel Company where he has served continuously in its flanging, railroad and general sales departments, with the exception of a period of one year in 1928. In 1935, he was appointed assistant to vice-president in charge of sales, which position he held at the time of his recent promotion to general manager of sales.

The Cleveland district offices of **The Linde Air Products Company**, the **Carbide and Carbon Chemicals Corporation**, and the **Haynes Stellite Company**, all of which are units of the **Union Carbide and Carbon Corporation**, New York, are now located at 1517 Superior avenue, Cleveland, Ohio. The district managers are **H. H. Dyar**, for The Linde Air Products Company, **E. E. Fogle**, for the Carbide and Carbon Chemicals Corporation, and **F. P. Shephard**, for the Haynes Stellite Company.

Construction

CENTRAL OF GEORGIA.—A new 100-ton capacity, structural steel, shallow pit locomotive coaling plant constructed by the Ross and White Co., Chicago, complete with weighing facilities, sand storage and drying plant, has recently been completed at Atlanta, Ga.

CHICAGO, ROCK ISLAND & PACIFIC.—A contract has been awarded the Ross & White Company, Chicago, for the construction and installation, complete with foundation, of two automatic, electric locomotive coalers, which will be installed at Inver Grove, Minn., and Trenton, Mo.

CHICAGO, ROCK ISLAND & PACIFIC.—A contract has been awarded Hyman-Michaels Company, Chicago, for the removal of that portion of the Anadarko line between Bridgeport, Okla., and Anadarko, approximately 37 miles. All steel and scrap metal salvaged from the line is being sold to the contractor and bridge timbers, ties and other material salvaged will be retained by the Rock Island.

CHICAGO, ROCK ISLAND & PACIFIC.—A contract amounting to approximately \$470,000 has been awarded the Thomas McQueen Company, Chicago, for the construction of a viaduct over 43 tracks of the Rock Island on Burr Oak Avenue in Blue Island, Ill. The viaduct, including retaining wall approaches, will be approximately 1,885 ft. long and will provide a clear roadway 44 ft. wide, with sidewalks and handrails on both sides. The bridge proper will be 1,496 ft. long and will consist of three WF-beam approach spans totalling 233 ft. in length on each end and seven continuous steel girder center spans totalling 1,030 ft. in length. The piers and abutments will be of reinforced concrete, supported on piling and the deck will be of reinforced concrete construction.

Financial

BAMBERGER.—Securities.—This company has been granted authority by the Interstate Commerce Commission to issue \$750,000 of general mortgage bonds and 45,000 shares of common stock without par value in connection with the acquisition of the properties formerly owned by the Bamberger Electric Railroad Company. The bonds will bear interest at the rate of two per cent from January 1, 1939, to January 1, 1941, and thereafter at the rate of 3½ per cent, and will mature January 1, 1956.

BURLINGTON-ROCK ISLAND.—Securities.—This company has been authorized by Division 4 of the Interstate Commerce Commission to extend from July 1, 1935, to July 1, 1942, the date of maturity of \$1,489,954 of receiver's certificates and \$8,760,000 of Trinity & Brazos Valley first mortgage six per cent gold coupon bonds.

CHICAGO & NORTH WESTERN.—Hearing Set on Trustee.—The Interstate Commerce Commission has set June 22 as the date for a public hearing on the recently received application of Charles M. Thomson, now a trustee of the Chicago & Eastern Illinois, for permission to serve as a trustee of the Chicago & North Western in the place of C. P. Megan who has resigned. The hearing on the ratification of the appointment of Mr. Thomson will be held before Examiner Boyden in Washington, D. C.

NEW YORK, NEW HAVEN & HARTFORD.—Reorganization of the Old Colony.—This company has notified the Interstate Commerce Commission that it is not willing to take over the properties of the Old Colony unless it is "finally and permanently relieved" of any obligation to operate passenger service over the lines of the so-called Boston group of the Old Colony. The New Haven stated that if permanent relief from the passenger business in the Boston commuting area can be obtained, it would be willing to acquire all of the Old Colony properties upon fair and equitable terms, "but not for as large a price as is proposed in the amended plan of the Old Colony." The Old Colony has recently proposed to turn over to the New Haven the most profitable parts of its lines and to reorganize separately with the Boston group of lines pending the abandonment within the next few years of those properties.

ERIE.—Disaffirmance of lease.—Trustees of this road, which is undergoing reorganization under Section 77, have disaffirmed its lease on the Avon, Geneseo & Mount Morris, a 16-mile branch line between Avon, N. Y., on the Erie main line, and Mount Morris. The court has approved disaffirmance of the lease and the election of the trustees to discontinue operation of trains on the line. Further action by the court with respect to financial responsibility for operation of the line pending determination by the Interstate Commerce Commission of the application made by the A. G. & M. M. for leave to

abandon the road, is pending. The road was opened in 1855 and leased in perpetuity to the Erie in 1896 for a rental of 3½ per cent of 225,000 shares of capital stock.

Negotiations are pending between the Erie and the Rochester & Genesee Valley for a reduction in rent on the line between Rochester, N. Y., and Avon (18 miles), leased to the Erie. No agreement has as yet been authorized by the stockholders of the latter road or by the court for the Erie trustees.

At a recent hearing before the New York Public Service Commission on an application of the Red Wing Transit Corporation for a bus franchise in the territory, a representative of the Erie trustees stated that it was contemplated that services between Avon and Mount Morris would be discontinued but that the Erie would continue to run a daily passenger train in each direction between Rochester and Elmira via Avon and Corning.

SOUTHERN.—Debt Conversion Plan.—This road is discussing with large security-holders a conversion plan whereby holders of \$50,000,000 of development and general mortgage 6s and 6½s, due 1956, would agree to give the company a call upon such bonds at 103 for the first five years, 102 for the second five years, 101 for the third five years and 100 for the remaining two years to maturity. Set forth in a printed statement of the proceedings of the annual meeting held May 16, the tentative plan indicates that, in return for this privilege, the Southern would give bondholders the right to subscribe to no-par common stock at not less than \$45 per share, with possible slight adjustments in favor of the holders of the 6½s. The price of the stock in the conversion offer would advance during the period of its effectiveness. Elimination of the two bond issues would reduce annual interest charges by \$3,150,000.

UNION PACIFIC.—Director elected.—H. W. Clark, vice-president and general counsel of this road, with headquarters at New York, was elected a director May 25 to succeed the late Carl R. Gray.

WHEELING & LAKE ERIE.—Bonds.—This company has asked the Interstate Commerce Commission for authority to issue \$7,438,000 of refunding mortgage serial bonds to refund a like amount of bonds now outstanding. The bonds now outstanding are \$5,250,000 of series F 3½ per cent bonds and \$4,188,000 of series E 2½ per cent bonds. The new bonds will be sold at par and accrued interest and the company estimates that the refunding will result in an estimated net saving of \$963,619.

Average Prices of Stocks and Bonds

	June 13	Last week	Last year
Average price of 20 representative railway stocks..	28.65	29.44	21.06
Average price of 20 representative railways bonds..	59.72	59.46	53.93

Dividends Declared

Pittsburgh, Ft. Wayne & Chicago.—\$1.75, quarterly, payable July 1 to holders of record June 10; Preferred, \$1.75, quarterly, payable July 5 to holders of record June 10.

Railway Officers

EXECUTIVE

J. B. John, vice-president of the Toledo, Angola & Western, with headquarters at Cleveland, Ohio, has been elected president and **P. G. Dawson**, secretary and treasurer has been elected vice-president and treasurer.

FINANCIAL, LEGAL AND ACCOUNTING

Allan P. Matthew has been appointed general counsel for the trustees of the Western Pacific, with headquarters at San Francisco, Cal., succeeding **Warren Olney, Jr.**

Frederick Pickford, assistant secretary and assistant treasurer of the Toledo, Angola & Western, with headquarters at Cleveland, Ohio, has been promoted to secretary and assistant treasurer.

Le Trude McIntyre, whose election as treasurer of the Texas & Pacific, with headquarters at Dallas, Tex., was announced in the *Railway Age* of June 3, was born at Palestine, Tex., on December 12, 1892, and graduated from Jameson's Business College at Palestine in 1911. He entered railway service on October 7, 1911, as a clerk in the disbursement accounting department of the Texas & Pacific, and a year later he was transferred to the treasury department. On October 8, 1917, he became a clerk and teller in the Federal Reserve Bank at Dallas, and a few weeks later he returned to the Texas & Pacific as manager of the Liberty Loan division



Le Trude McIntyre

of the treasury department. A year later he was appointed cashier in that department and on August 15, 1936, he was promoted to assistant treasurer, the position he held at the time of his recent promotion.

OPERATING

H. H. Sparling, superintendent of transportation on the Canadian National,

with headquarters at Edmonton, Alta., has been promoted to superintendent of the Edmonton division, with the same headquarters, succeeding **J. L. Cameron**, who has retired, and **F. H. Keefe**, assistant superintendent at Edson, Alta., has been promoted to superintendent of transportation at Edmonton, replacing Mr. Sparling. **J. R. McMillan**, assistant superintendent at Mirror, Alta., has been transferred to Edson, relieving Mr. Keefe, and the position of assistant superintendent at Mirror has been abolished.

H. C. Wyatt has been appointed superintendent of the Shenandoah division of the Norfolk & Western at Roanoke, Va.,



H. C. Wyatt

as noted in the *Railway Age* of June 3. After working for the Norfolk & Western during school vacation periods, Mr. Wyatt was appointed special apprentice in the Roanoke shops in June, 1924. Since that time he served successively as shop inspector at Roanoke and Bluefield, W. Va.; special apprentice at Portsmouth, Ohio; assistant foreman and foreman at Iaeger, W. Va.; assistant road foreman of engines, Pocahontas division; and general foreman at Columbus, Ohio. Mr. Wyatt was promoted to assistant master mechanic of the Radford-Shenandoah divisions on August 1, 1937, the position he held until his recent appointment as division superintendent.

C. H. Tabor, whose appointment as assistant general superintendent of the Western General division of the Norfolk & Western at Bluefield, W. Va., was noted in the *Railway Age* of June 3, began his railroad career on May 1, 1907, as water boy on the Pocahontas division of the N. & W. Two years later he was promoted to timekeeper and in November, 1911, he became yard clerk at Wilcoe, W. Va. On April 20, 1917, he was promoted to assistant yardmaster at Wilcoe. Following two years of overseas service during the World War, he returned to the Norfolk & Western in July, 1919, as yardmaster at Iaeger, W. Va. Mr. Tabor was appointed general yardmaster at Wilcoe in February, 1925, and continued in that capacity for two years, then being promoted to assistant trainmaster of the Pocahontas division. He became terminal trainmaster at Bluefield in 1933 and was appointed trainmaster of the Pocahontas division on October 1,

Continued on next left-hand page



On this grinding machine at Lima joints are ground to a smooth, even finish.

Care "Plus"

The grinding operation illustrated above is typical of the Care "Plus" that goes into the manufacture of a Lima-built locomotive. Here, joints under pressure are ground to a smooth, even surface that can be made steam tight and kept that way. It is by such attention to details that Lima has earned its reputation.

LIMA LOCOMOTIVE WORKS



INCORPORATED, LIMA, OHIO

1934, being transferred in the same capacity to the Scioto division in 1936. Mr. Tabor was appointed superintendent of the



C. H. Tabor

Pocahontas division on December 1, 1936, and was transferred in the same capacity to the Scioto division on July 25, 1938, the position he held until his recent appointment.

Walter O. Frame, whose promotion to superintendent of the Centerville division of the Chicago, Burlington & Quincy, with headquarters at Centerville, Iowa, was announced in the *Railway Age* of June 3, was born at Osceola, Iowa on October 27, 1890, and entered railway service in 1905 in the track department of the Burlington at Osceola, serving successively as a section foreman, extra gang foreman and as a foreman in charge of construction until 1911, when he was made construction roadmaster on grade reduction work for the Kansas City Terminal. Two years later he went with the Chicago, Rock Island & Pacific as an extra gang foreman, later returning to the Burlington as an extra gang foreman on the St. Joseph division. In 1916, Mr. Frame was advanced to roadmaster on the Hannibal division, and from 1918 to 1921, he served as roadmaster and



Walter O. Frame

assistant trainmaster on the Aurora division. At the end of this period he was made inspector of maintenance of way on the staff of the general manager of the Lines East of the Missouri river, then be-

ing assigned to the Beardstown division, where he served as trainmaster and roadmaster until 1927. In March of that year he was appointed engineer of maintenance of way of the Illinois district, being transferred to the Iowa district in August, 1927, and to the Central district in October, 1931. In July, 1936, Mr. Frame was advanced to assistant superintendent, with headquarters at Wymore, Neb., the position he held until his recent promotion. Mr. Frame has been active in the Roadmasters' and Maintenance of Way Association of America for many years and was president of that organization in 1937-1938.

O. W. Limestall, superintendent of the Rock Island division of the Chicago, Rock Island & Pacific, with headquarters at Rock Island, Ill., has been promoted to general superintendent of the First operating district, with headquarters at Des Moines, Iowa, replacing **W. H. Dick**, who has been appointed assistant to chief operating officer, with headquarters at Kansas City, Mo., succeeding to the duties of **C. J. Brown**, general manager, who has taken a leave of absence because of illness. **C.**



O. W. Limestall

L. Franklin, superintendent of the Chicago division, with headquarters at Chicago, has been transferred to Rock Island succeeding Mr. Limestall and **W. Heide**, trainmaster on the Chicago division, has been appointed acting superintendent of that division, relieving Mr. Franklin.

Mr. Limestall was born in Monroe County, Ill., on January 9, 1902. Following a business college and extension university education, he entered railway service with the Illinois Terminal in 1918, serving as an operator and towerman until 1920, when he went with the Missouri Pacific, where he held the positions of operator, agent and train dispatcher. In 1922, he returned to the Illinois Terminal and after a year with that company he again took up service with the Missouri Pacific. In 1927 Mr. Limestall went with the Toledo, Peoria & Western, where he was advanced successively through the positions of train dispatcher, night chief dispatcher, assistant superintendent and superintendent. On July 1, 1936, he left this company to go with the Rock Island as trainmaster in the Peoria (Ill.) territory and on September 5, 1936, he was advanced to assistant superintendent on the Missouri-Kansas division at Trenton, Mo. On March 1, 1937, he

was promoted to superintendent of the Arkansas division, with headquarters at Little Rock, Ark., and the following October he was transferred to El Reno, Okla. Mr. Limestall was transferred to Rock Island in December, 1938.

J. D. Healy, special representative of the vice-president on the Canadian National, with headquarters at Winnipeg, Man., has been promoted to superintendent, with headquarters at Prince Albert, Sask., succeeding **Walter J. Donnelly**, who has been transferred to Winnipeg to relieve **James W. Crane**, who has retired. **F. J. Myers**, assistant superintendent at Brandon, Man., has been appointed special representative of the vice-president at Winnipeg replacing Mr. Healy, and **J. C. Crombie**, assistant engineer at Montreal, Que., has been promoted to assistant superintendent at Brandon, succeeding Mr. Myers.

TRAFFIC

H. A. Robertson has been appointed assistant freight traffic manager on the Denver & Rio Grande Western, with headquarters at Denver, Colo., a newly created position.

Paul Echols, assistant general freight agent on the Illinois Central at Chicago, has been transferred to Memphis, Tenn. **E. N. Crowson**, commercial agent at Indianapolis, Ind., has been promoted to foreign freight agent, with headquarters at Chicago.

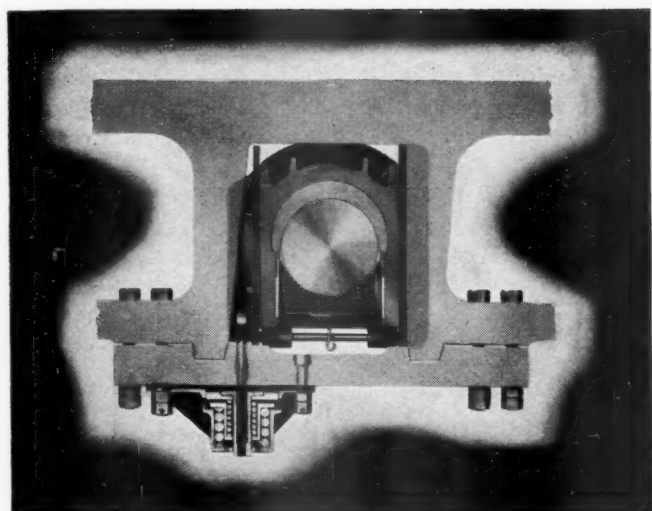
Kenneth G. Carlson, whose promotion to general freight agent on the Union Pacific, with headquarters at Denver, Colo., was announced in the *Railway Age* of May 20, first entered railway service in 1917 in the traffic department of the Atchison, Topeka & Santa Fe at Kansas City, and in 1922 he went with the Union Pacific as chief rate clerk. In 1927, he was transferred to Omaha, Neb., and later he served in Interstate Commerce work, as chief rate clerk for the Union Pacific system and as chief rate clerk to the freight



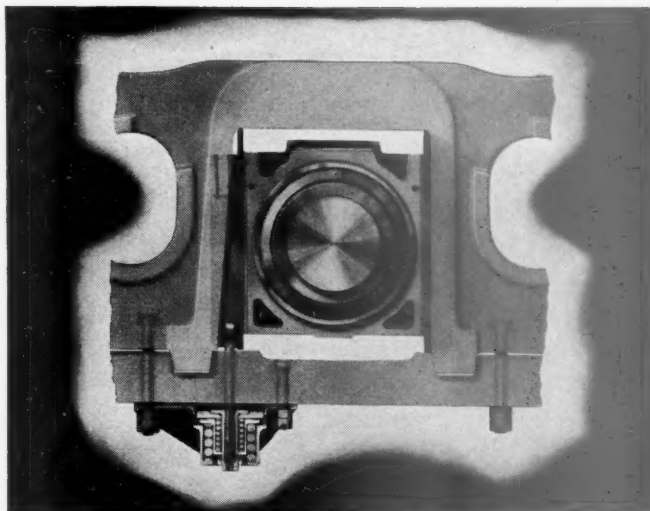
Kenneth G. Carlson

traffic manager. Mr. Carlson was promoted to general agent at Sioux City, Iowa, on January 1, 1937, and on September 1, 1938, he was advanced to assistant general freight agent, with headquarters at

YOU, TOO, CAN GET 250,000 MILES without wedge adjustment



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FRANKLIN RAILWAY SUPPLY COMPANY, INC.

NEW YORK

CHICAGO

MONTREAL

Omaha, the position he held until his recent promotion.

Tom J. Dowd, general agent on the Union Pacific at Spokane, Wash., has been promoted to assistant general freight agent at Portland, Ore., a newly created position, and **Harley M. Adkins**, general agent at Yakima, Wash., has been transferred to Spokane, succeeding Mr. Dowd. **Ray J. Curtin**, general agent at Tacoma, Wash., has been transferred to Yakima, relieving Mr. Adkins and **Richard Ward**, freight traffic agent at Tacoma, has been promoted to general agent at that point, replacing Mr. Curtin.

ENGINEERING AND SIGNALING

W. H. Barnard, whose appointment as bridge engineer of the Southern, with headquarters at Washington, D. C., was announced in the *Railway Age* of June 10,



(c) Bachrach

W. H. Barnard

has been identified with this road continuously for more than 22 years. He was born at Poughkeepsie, N. Y., on December 24, 1890, and studied at Baltimore Polytechnic Institute, later graduating from Cornell University in 1913, with the degree of civil engineer. Shortly after his graduation he entered the service of the American Bridge Company as a draftsman at its plant at Edge Moor Del., remaining with this company until December, 1916, when he entered the service of the Southern as an assistant engineer in the bridge department at Washington. In May, 1917, Mr. Barnard was transferred to Charlotte, N. C., where he was advanced to assistant engineer of bridges for the Lines East in 1922. In 1925, he returned to Washington as structural engineer in the office of the assistant to the vice-president in charge of maintenance. Six years later, Mr. Barnard was appointed assistant bridge engineer of the system, which position he was holding at the time of his recent promotion to bridge engineer.

MECHANICAL

R. B. Miller has been appointed master mechanic, Kamloops division, British Columbia district, Canadian National, with headquarters at Jasper, Alta.

Logan A. Hamilton, locomotive engi-

neer of the Union Pacific, has been promoted to acting fuel engineer of the Eastern district, with headquarters at Omaha, Neb., relieving **O. K. Woods**, who has been given a leave of absence on account of illness.

A. C. Schroeder, general foreman of the freight shop of the Chicago, Milwaukee, St. Paul & Pacific, at Milwaukee, Wis., has been promoted to general car department supervisor at Minneapolis, Minn., succeeding **F. J. Swanson**, who has been appointed general foreman in the freight department of the Milwaukee shops at Milwaukee.

OBITUARY

Oscar S. Garrett, general agent on the Missouri-Kansas-Texas at San Antonio, Tex., died at a Dallas (Tex.) hospital on May 24.

John C. Prien, general agent, passenger department on the Chicago, Milwaukee, St. Paul & Pacific, at Milwaukee, Wis., died suddenly at his home in that city on June 9.

Calvin C. Hipkins, road foreman of engines of the New York zone of the Pennsylvania, with headquarters at Jersey City, N. J., died on June 12 at his home in Union, N. J., following a heart attack. He was 57 years old.

John M. Cleaveland, special traffic representative on the Pere Marquette at Milwaukee, Wis., and from 1918 to 1931, president and general manager of the Pere Marquette Line Steamers Company, died of heart disease at his home in Milwaukee on June 13. Mr. Cleaveland was 69 years old.

John Marshall Ferguson, superintendent of transportation of the Clinchfield, with headquarters at Erwin, Tenn., whose death on May 11 at Johnson City, Tenn., was announced in the *Railway Age* of June 3, was born at Paris, Va., on August 6, 1869, and entered railway service on November 27, 1891, as a track supervisor's clerk on the Norfolk & Western at Hagerstown, Md. On June 8, 1899, he was promoted to assistant maintenance of way clerk on the Pocahontas division at Bluefield, W. Va. He was later made night car distributor at that point and in March, 1903, he was promoted to chief clerk to the superintendent. On September 1, 1905, he went with the South & Western (now part of the Clinchfield) as chief clerk to the general manager at Bristol, Va., later being transferred to Johnson City, Tenn. In April, 1911, he was appointed car service agent at Erwin, Tenn. During the World War Mr. Ferguson was appointed assistant to the general superintendent of transportation of the Southern at Charlotte, N. C., and in July, 1919, he returned to Erwin, Tenn., as assistant to the president of the Clinchfield. On March 1, 1920, he was appointed superintendent of transportation, the position he held at the time of his death.

Albert Sidney Edmonds, assistant traffic manager of the Northwestern dis-

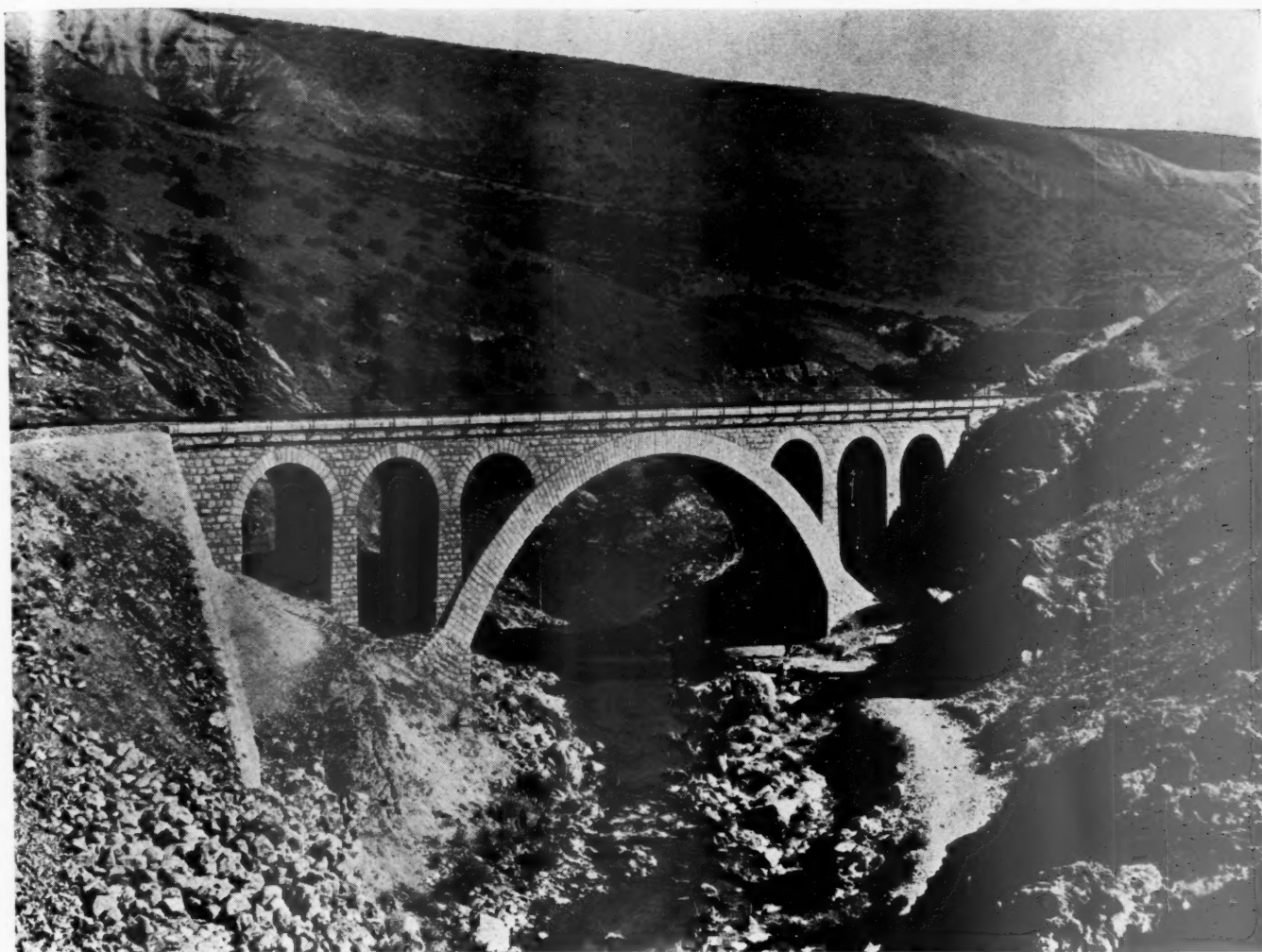
trict of the Union Pacific, with headquarters at Portland, Ore., died at that point on June 10, after a short illness. Mr. Edmonds was born at Louisville, Ky., on July 7, 1881, and entered railway service in 1899 as a messenger and correspondence clerk in the office of the assistant freight traffic manager of the Southern at Louisville. He was later promoted through the positions of assistant rate clerk, rate clerk, and assistant chief rate clerk at Washington, D. C., and Atlanta, Ga. In 1903, he became traveling freight agent for the Mallory Steamship Company, later becoming commercial agent at Atlanta. Mr. Edmonds returned to railway service in 1908, as general agent at Atlanta for the Missouri Pacific. Four years later he was transferred to Philadelphia, Pa., and in 1915, he left the Missouri Pacific to become traffic manager for the Chesapeake Steamship Company, with headquarters at Baltimore, Md. He returned to the Missouri Pacific in 1917 as assistant freight traffic manager, with headquarters at St. Louis, Mo. During the war Mr. Edmonds served as assistant chief of the Inland Traffic Service of the War Department and later as an assistant in the division of traffic of the U. S. Railroad Administration at Washington, D. C. In 1920 he went with the Union Pacific as general traffic manager of the Los Angeles & Salt Lake, with headquarters at Los Angeles, Cal., and the following year he was appointed traffic manager of the Oregon-Washington Railroad & Navigation Company (part of the Union Pacific system), with headquarters at Portland. His title was later changed to assistant traffic manager, the position he held at the time of his death.

Burt J. Farr, general superintendent of motive power and car equipment of the Grand Trunk Western, with headquarters at Battle Creek, Mich., died at that point on June 10, after an extended illness. Mr. Farr was born at Ellensburg, N. Y., on September 18, 1876, and entered railway service in 1893 as a machinist apprentice on the Central Vermont. In 1898, he was



Burt J. Farr

promoted to machinist and two years later he was advanced to general foreman. In 1907, he went with the Northern Railway of Costa Rica as master mechanic and in



DIARBAKIR BRIDGE
TURKEY

This massive stone structure on the newly constructed single-track route between Fevzi Pasha, in Southern Turkey, and Diarbakir, on the Eastern Border, was built by the Turkish public works department for the State Railways. The main arch, which stands 70 ft. from rail level to the river bed, has a span of 79 ft. and is flanked on either side by three minor arches.

* * * * *

The Security Sectional Arch has played a leading part in the development of present day low-cost steam transportation. But only when your locomotives leave the roundhouse with a *complete* arch, with every brick in place, can you realize the full efficiency of your arch.

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1910 he went with the Panama Railroad, serving in the engineering department. On January 1, 1915, after his return to this country, Mr. Farr was appointed general foreman on the Grand Trunk Western at Nichols, Mich., and a few months later he was appointed locomotive foreman. He was promoted to master mechanic on October 1, 1916, and two years later he was advanced to superintendent of motive power and car building at Detroit, Mich. Mr. Farr was further advanced to general superintendent of motive power and car equipment, with headquarters at Battle Creek, on January 1, 1928.

James W. King, vice-president of the Association of American Railroads in charge of its Operations and Maintenance Department, was found dead on June 12 along the Richmond, Fredericksburg & Potomac tracks about 20 miles north of Richmond, Va. According to information received at the A. A. R., he became weak from illness, and fell off the rear platform of the train on which he was traveling to his home in Richmond. Mr. King, who had returned to Washington Sunday evening after spending the week end with his family in Richmond, telegraphed his wife on Monday morning that he was ill and was returning home. Mr. King, who came to the A. A. R. last January as successor to J. M. Symes, was born on February 13, 1890, in Sussex County, Va., and learned telegraphy in the local telegraph office of the Atlantic Coast Line while attending school. After completing school in Sussex County, Mr. King attended Smithdeal Business College, Richmond. He entered the service of the Chesapeake & Ohio at Richmond as clerk in the Fulton shops in 1906, and three months later became secretary to the superintendent of the Atlantic Coast Line at Richmond. In the summer of 1907 he returned to the Chesapeake & Ohio as a clerk in the Richmond office of the general passenger agent, and on September 1, 1907, became secretary to the superintendent of transportation of the Atlantic Coast Line at Rocky Mount, N. C. Mr. King remained in this position until

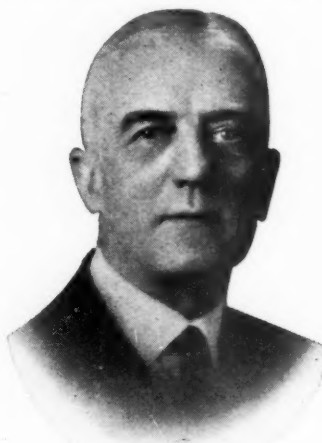


James W. King

December 31, 1908, and on January 20, 1909, re-entered the service of the Chesapeake & Ohio as secretary to the general agent, transportation department. After a

few months in this position Mr. King was delegated to organize and put in operation a Salvage department for the handling and sale of goods damaged in transit and on May 1, 1910, he was appointed chief clerk of the somewhat similar department of Personal Injury, Fire and Stock Claims, of which he was in charge. On November 1, 1916, he was appointed chief special agent and on August 1, 1922, became freight claim agent. He served as a member of the Executive Committee, Freight Claim division, American Railway Association and as chairman of an Arbitration Committee, and was chairman of the Chicago, Virginia and Southeastern Claim Conferences, respectively. Mr. King was appointed general superintendent of transportation of the Chesapeake & Ohio on April 18, 1933, the position he held until his election to the Association of American Railroads last January. In 1934 Mr. King was appointed by the Co-ordinator of Transportation to membership on the Committee on Freight Car Pooling. He was a past president of the Richmond Traffic Club.

Wilbur E. Coman, vice-president of the Northern Pacific, with headquarters at Seattle, Wash., died in that city on June 10, after a short illness. Mr. Coman was born at Portage, Wis., on May 15, 1872, and entered railway service at the age of



Wilbur E. Coman

16 years as a clerk on the Chicago, Burlington & Quincy at Kansas City, Mo., shortly after that time becoming connected with the traffic department of the Union Pacific at Portland, Ore. Mr. Coman was appointed assistant general freight agent of the Oregon-Washington Railroad & Navigation Company at Portland in 1901, and later served as assistant general freight agent of the Southern Pacific lines in Oregon, as general freight and passenger agent of the Southern Pacific, as general freight agent of the O.-W. R. R. & N. Co., and as general freight and passenger agent of the Oregon Electric; the Oregon Trunk; the Spokane, Portland & Seattle and the United Railways at Portland. On January 1, 1913, he left railway service to become vice-president and general manager of the Northwestern Electric Company at Portland, and in March, 1919, he was elected vice-president and general manager of the Washington Water Power Company at

Spokane, Wash. In 1921, Mr. Coman was appointed western traffic manager of the Northern Pacific, with headquarters at Seattle. On January 1, 1928, he was promoted to assistant to the president, with the same headquarters and in July, 1928, he was elected vice-president, the position he held at the time of his death.

Henry R. Harris, vice-president and general manager of the Lake Superior & Ishpeming, with headquarters at Marquette,



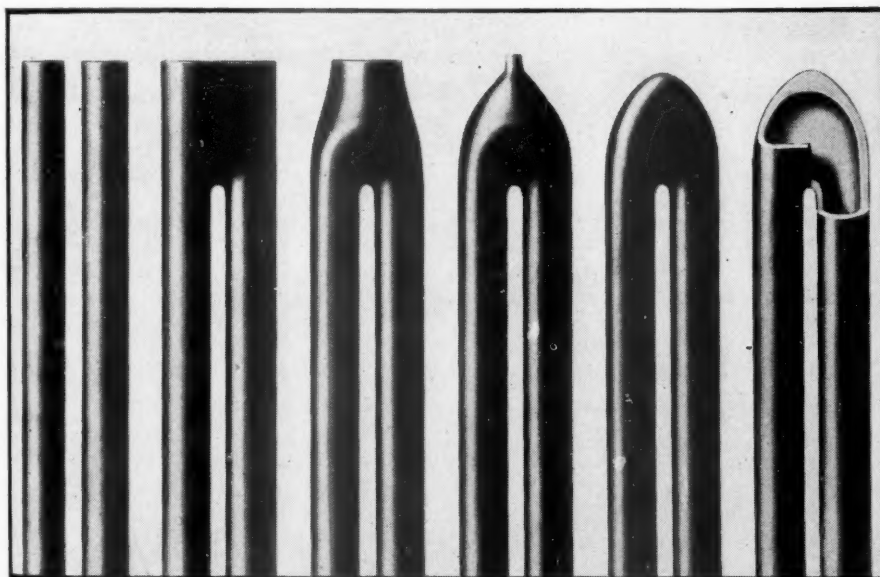
Henry R. Harris

Mich., whose death from a heart ailment on June 5, after a prolonged illness, was announced in the *Railway Age* of June 10, was born at Beloit, Wis., on July 31, 1861, and entered railway service in 1876 as a clerk and telegraph operator on the Galena division of the Chicago & North Western. In 1880, he became clerk to the general superintendent of the Detroit, Lansing & Northern (now Pere Marquette), and in 1889, he went with the Chicago & West Michigan (now Pere Marquette) as a rodman on construction work. From 1890 to 1892, he served in various capacities with the Central of Georgia; the Chicago & North Western; the Atchison, Topeka & Santa Fe and the Grand Rapids & Indiana (now part of the Pennsylvania). In 1892 he became a superintendent for the Pullman Company and a year later he returned to the Grand Rapids & Indiana as master of transportation. In 1897, when the Lake Superior & Ishpeming was organized, Mr. Harris became general manager, with headquarters at Marquette, and in 1917, he was elected vice-president and general manager, the position he held until his death.

ELECTRIC POWER OUTLETS.—"General-Purpose Plugs and Receptacles" is the title given to Bulletin No. 1140-3, published by The Pyle-National Company, Chicago. These fittings are used for extension lights, small portable motors, high-frequency portable tools, power supply for welding sets, battery charging for railway cars and industrial trucks, locomotive wiring, etc. They are made for multiple circuits with a maximum of six wires. Both plugs and receptacles have cast-metal housings to withstand hard use and abuse. The bulletin also lists various types of mountings and housings for the receptacles.

Table of Operating Revenues and Expenses appears on next left-hand page

Controlled Superheater Manufacture



FORGING RETURN BENDS INTEGRAL WITH TUBING — Steps In The Process of Remanufacturing Unserviceable Units.

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Superheaters - Superheated Steam Pyrometers - Exhaust Steam Injectors - Feed Water Heaters - American Throttles

Operating Revenues and Operating Expenses of Class I Steam Railways

Compiled from 136 Monthly Reports of Revenues and Expenses Representing 140 Class I Steam Railways

(Switching and Terminal Companies Not Included)

FOR THE MONTH OF APRIL, 1939 AND 1938

Item	United States		Eastern District		Southern District		Western District	
	1939	1938	1939	1938	1939	1938	1939	1938
Miles of road operated at close of month	233,552	234,741	57,580	57,968	44,477	44,720	131,495	132,053
Revenues:								
Freight	\$224,587,775	\$211,424,490	\$93,359,070	\$84,822,557	\$41,419,976	\$44,543,909	\$89,808,729	\$82,058,024
Passenger	31,791,316	31,805,139	17,712,147	17,589,071	4,739,359	4,766,798	9,339,810	9,449,270
Mail	8,121,529	7,909,809	3,110,934	3,050,817	1,430,440	1,392,455	3,580,155	3,466,337
Express	5,271,116	5,043,731	1,978,685	1,884,906	1,481,210	1,230,630	1,811,221	1,928,195
All other operating revenues	12,346,018	12,030,427	6,099,631	6,045,098	1,688,360	1,734,604	1,558,027	4,250,725
Railway operating revenues	282,117,754	268,213,596	122,260,467	113,392,449	50,759,345	53,668,396	109,097,942	101,152,751
Expenses:								
Maintenance of way and structures	36,459,178	33,144,187	13,854,611	11,985,756	6,304,016	6,488,801	16,300,551	14,669,630
Maintenance of equipment	58,927,064	54,870,959	24,867,613	22,388,643	11,124,821	10,524,200	22,934,630	21,958,116
Traffic	8,804,525	8,495,302	3,157,563	3,067,128	1,592,521	1,588,804	4,054,441	3,839,370
Transportation—Rail line	109,829,171	109,151,586	49,082,881	48,114,222	18,587,089	19,034,060	42,159,201	42,003,304
Transportation—Water line	375,872	368,957	.....	.....	.....	.....	375,872	368,957
Miscellaneous operations	2,859,959	2,968,712	1,214,820	1,342,650	436,815	415,592	1,208,324	1,210,470
General	10,644,111	10,688,021	4,223,678	4,228,666	2,014,756	2,016,048	4,405,677	4,443,307
Transportation for investment—Cr.	277,592	203,412	17,114	16,237	57,211	33,525	203,267	153,650
Railway operating expenses	227,622,288	219,484,312	96,384,052	91,110,828	40,002,807	40,033,980	91,235,429	88,339,504
Net revenue from railway operations	54,495,466	48,729,284	25,876,415	22,281,621	10,756,538	13,634,416	17,862,513	12,813,247
Railway tax accruals	27,828,466	28,060,043	12,376,580	12,177,326	4,964,086	5,425,094	10,487,800	10,457,623
Railway operating income	26,667,000	20,669,241	13,499,835	10,104,295	5,792,452	8,209,322	7,374,713	2,355,624
Equipment rents—Dr. balance	8,498,185	8,165,311	3,654,180	3,420,207	990,466	1,275,954	3,853,539	3,469,150
Joint facility rent—Dr. balance	2,910,880	3,106,798	1,622,095	1,709,870	339,403	358,667	949,382	1,038,261
Net railway operating income	15,257,935	9,397,132	8,223,560	4,974,218	4,462,583	6,574,701	2,571,792	†2,151,787
Ratio of expenses to revenues (per cent)	80.7	81.8	78.8	80.3	78.8	74.6	83.6	87.3
Depreciation included in operating expenses	16,839,986	16,801,549	7,378,437	7,314,805	3,323,709	3,287,393	6,137,840	6,199,351
Pay roll taxes	8,230,169	7,926,545	3,472,995	3,325,139	1,450,278	1,441,965	3,306,896	3,159,441
All other taxes	19,598,297	20,133,498	8,903,585	8,852,187	3,513,808	3,983,129	7,180,904	7,298,182

FOR FOUR MONTHS ENDED WITH APRIL, 1939 AND 1938

Miles of road operated at close of month*	233,680	234,788	57,620	57,991	44,502	44,720	131,558	132,077
Revenues:								
Freight	\$953,688,085	\$855,173,700	\$403,777,465	\$342,454,488	\$196,351,698	\$181,117,161	\$353,558,922	\$331,602,051
Passenger	128,013,979	131,483,945	70,471,199	71,427,876	20,921,913	21,785,564	36,620,867	38,270,505
Mail	31,794,910	31,075,407	12,193,824	11,870,158	5,596,187	5,488,378	14,004,899	13,716,871
Express	17,057,460	14,975,811	6,448,198	5,153,896	4,446,488	3,691,110	6,162,774	6,130,805
All other operating revenues	49,337,439	48,668,105	24,511,031	24,226,438	6,866,136	6,888,782	17,960,272	17,552,885
Railway operating revenues	1,179,891,873	1,081,376,968	517,401,717	455,132,856	234,182,856	218,970,995	428,307,734	407,273,117
Expenses:								
Maintenance of way and structures	133,107,593	125,253,447	51,960,626	47,168,189	26,252,896	25,511,006	54,894,071	52,574,252
Maintenance of equipment	245,153,322	225,841,431	106,325,985	93,688,155	47,201,688	43,795,811	91,625,649	88,357,465
Traffic	34,569,086	34,337,381	12,373,669	12,334,793	6,721,577	6,749,221	15,473,840	15,253,367
Transportation—Rail line	453,375,732	453,847,888	204,579,318	200,580,938	78,643,461	78,949,547	170,152,953	174,317,403
Transportation—Water line	1,559,015	1,633,827	.....	.....	.....	.....	1,559,015	1,633,827
Miscellaneous operations	11,871,760	12,631,955	5,128,080	5,645,104	1,922,954	1,922,189	4,820,726	5,064,662
General	42,789,280	43,614,372	17,164,413	17,260,629	8,083,996	8,340,672	17,540,871	18,013,071
Transportation for investment—Cr.	878,338	752,617	69,102	99,771	175,700	151,915	633,536	500,931
Railway operating expenses	921,547,450	896,407,684	397,462,989	376,578,037	168,650,872	165,116,531	355,433,589	354,713,116
Net revenue from railway operations	258,344,423	184,969,284	119,938,728	78,554,819	65,531,550	53,854,464	72,874,145	52,560,001
Railway tax accruals	114,069,180	112,304,317	48,476,951	47,028,532	23,394,616	22,768,931	42,197,613	42,506,854
Railway operating income	144,275,243	72,664,967	71,461,777	31,526,287	42,136,934	31,085,533	30,676,532	10,053,147
Equipment rents—Dr. balance	31,599,306	31,116,995	13,909,922	12,947,095	2,841,409	3,285,047	14,847,975	14,884,853
Joint facility rent—Dr. balance	11,609,659	12,187,662	6,339,210	6,665,297	1,299,027	1,318,786	3,971,422	4,203,579
Net railway operating income	101,066,278	29,360,310	51,212,645	11,913,895	37,996,498	26,481,700	11,857,135	†9,035,285
Ratio of expenses to revenues (per cent)	78.1	82.9	76.8	82.7	72.0	75.4	83.0	87.1
Depreciation included in operating expenses	67,262,500	67,136,726	29,326,914	29,228,741	13,304,763	13,118,752	24,630,823	24,789,233
Pay roll taxes	33,443,568	32,661,961	14,393,024	13,814,347	6,038,452	5,955,888	13,012,092	12,891,726
All other taxes	80,625,612	79,642,356	34,083,927	33,214,185	17,356,164	16,813,043	29,185,521	29,615,128

* Represents an average of the mileage reported at the close of each month within the period.

† Deficit or other reverse items.

Compiled by the Bureau of Statistics, Interstate Commerce Commission. Subject to revision.